



# **City of Fitchburg Massachusetts 01420**

## **CITY COUNCIL**

### **President**

**Michael P. Kushmerek**

### **Vice President**

**Amy L. Green**

### **Councillors at Large**

**Jeffrey A. Bean**

**David Clark**

**Marcus L. DiNatale**

**Stephan Hay**

**Dean A. Tran**

### **Ward Councillors**

**Ward 1 – Amy L. Green**

**Ward 2 – Paul R. Beauchemin**

**Ward 3 – Joel R. Kaddy**

**Ward 4 – Michael P. Kushmerek**

**Ward 5 – Angelo J. Bisol, Jr.**

**Ward 6 – Jody M. Joseph**

March 9, 2016

Council as a Whole Committee was held on Tuesday, March 8, 2016 at Memorial Middle School library, 615 Rollstone Street Fitchburg and called to order by President Kushmerek at 6:00PM. 9 members of the Council were present. Councillors Bean and Tran were absent.

There was one item on the agenda as follows:

- 28-2016. John M. Deline, Jr., Deputy Commissioner of Water Supply, to approve increases in the minimum monthly charges, water usage rate and miscellaneous charges described in Chapter 177, Article VI, Section 177-15 of the City Code. (Rate/fee increases detailed in petition.)

Deputy DPW Commissioner for Water Supply John Deline and Mike Schrader, P.E., Tighe & Bond Project Manager were present. Together they presented the attached Power Point. Also attached to these minutes are two documents which were placed at each councillors' seat.

Public comment was received as follows:

1. Michael Breton, 484 Shea Street. He displayed a glass jar filled with noticeably yellow water which he stated was a water sample from his home. He stated that he has had to replace the water lines to his house as well as the mixing valve on his heating system and shower valves due to rust build up. He supports the increase in water rates if the problem will be fixed.
2. Christine Breton, 484 Shea Street. States she grew up at this address but only moved back to this house a year and one half ago. She stated that she was shocked by the poor water quality. She stated they have had to purchase new appliances (dishwasher, washing machine) and throw away clothes due to chronic rusty water. She supports an increase in the water rates if the problem will be fixed.

3. Mrs. Breton read a statement from Patricia Pezzolesi who lives at 487 Shea Street. The statement echoed the concerns about rusty water expressed by the Bretons.
4. Written statement from Thomas and Ellen Hughes, 15 Haskell St. (attached to these minutes)

Discussion and question/answer session continued with the Councillors, Mr. Schrader and Mr. Deline. Comments and concerns expressed included the following:

- Not opposed to water rate increase if the distribution system will be benefit. Revenue from the increase should not be used to fund additional staff;
- The water rate is only a small portion of the water/sewer bill. The sewer rate is higher than the water rate. The public needs to be educated on the difference between the two and how the bills are compiled;
- Shea Street is an area of particular concern with long-standing issues of poor water quality. It was identified as a priority on the list of water main replacement projects;
- It is likely that a replacement of the water main on Shea Street will not occur until next spring after funding is secured and the bid process completed;
- Can there be something done to provide free water to the residents on Shea Street in the meantime – such as allowing them access to water at the plant;
- The bleeder system in the Shea Street area is not working as intended;
- Water main projects are outsourced but in-house staff provide support during the projects;
- Complaints are currently logged in to MUNIS but there is no practical way of extracting the data in to a useful format. The Water Dept. is working on a GIS system to be able to map out complaints;
- Although the distribution system is a priority, the plants and facilities also need to be adequately maintained;
- Adequate water flow for fire protection is a priority;

Motion and second to recommend that the petition BE GRANTED passed by unanimous vote. 9 members present. Board consists of 11 members.

The meeting adjourned at 8:35 PM.

Respectfully Submitted,



Anna M. Farrell  
City Clerk

FITCHBURG CITY CLERK  
16 FEB 11 09 24

**TO THE HONORABLE CITY COUNCIL OF THE CITY OF FITCHBURG**

Ladies and Gentlemen:

The undersigned Petition your Honorable Body to

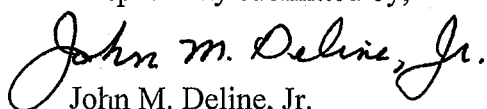
to approve increases in the minimum monthly charges, water usage rate, and miscellaneous charges described in Chapter 177, Article VI, Section 177-15 of the City Code. The rate/fee increases which are proposed by the City of Fitchburg D.P.W. - Division of Water Supply are as follows:

Minimum Monthly Charges (includes usage of 200 cubic feet per month)				
Meter Size	Current Rate	June 1, 2016	June 1, 2017	June 1, 2018
5/8", 3/4", 1"	\$5.34	\$6.25	\$6.75	\$7.09
1-1/2" (1.5")	\$16.80	\$19.66	\$21.24	\$22.31
2"	\$25.20	\$29.49	\$31.85	\$33.45
3"	\$48.00	\$56.16	\$60.66	\$63.70
4"	\$73.60	\$86.12	\$93.01	\$97.67
6"	\$145.20	\$169.89	\$183.49	\$192.67
8"	\$230.80	\$270.04	\$291.65	\$306.24

Water rate to be charged for usage in excess of 200 cubic feet per month				
	Current Rate	June 1, 2016	June 1, 2017	June 1, 2018
Rate per 100 cubic feet (which equals 748 gallons)	\$3.16	\$3.70	\$4.00	\$4.20

Miscellaneous Charges (Only Those Charges Listed Below Are Proposed To Be Increased)		
Service/Inspection/Activity	Current Fee	Proposed Fee
Backflow Prevention Device Testing	\$75.00/test	\$85.00/test
Backflow Prevention Device Re-test after failure	\$50.00/re-test	\$55.00/re-test
Additional services and/or emergency calls outside of regular work hours (regular work hours are: M – F, 7:00 a.m. – 3:00 p.m.).	\$125.00 per hour (one hour minimum), \$62.50 per additional half-hour	\$150.00 per hour (one hour minimum), \$75.00 per additional half-hour
Engineering services/inspections.	\$75.00 per hour	\$100.00 per hour

Respectfully submitted by,



John M. Deline, Jr.

Deputy Commissioner of Water Supply

## **Fitchburg, MA Water Rate Study**

Fitchburg City Council

March 8<sup>th</sup>, 2016

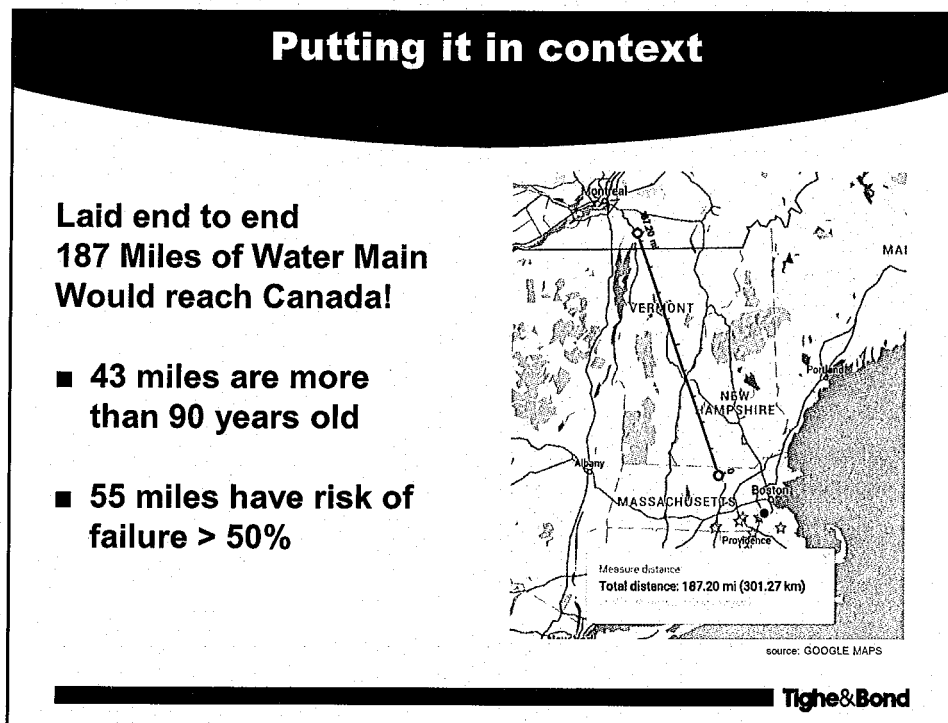
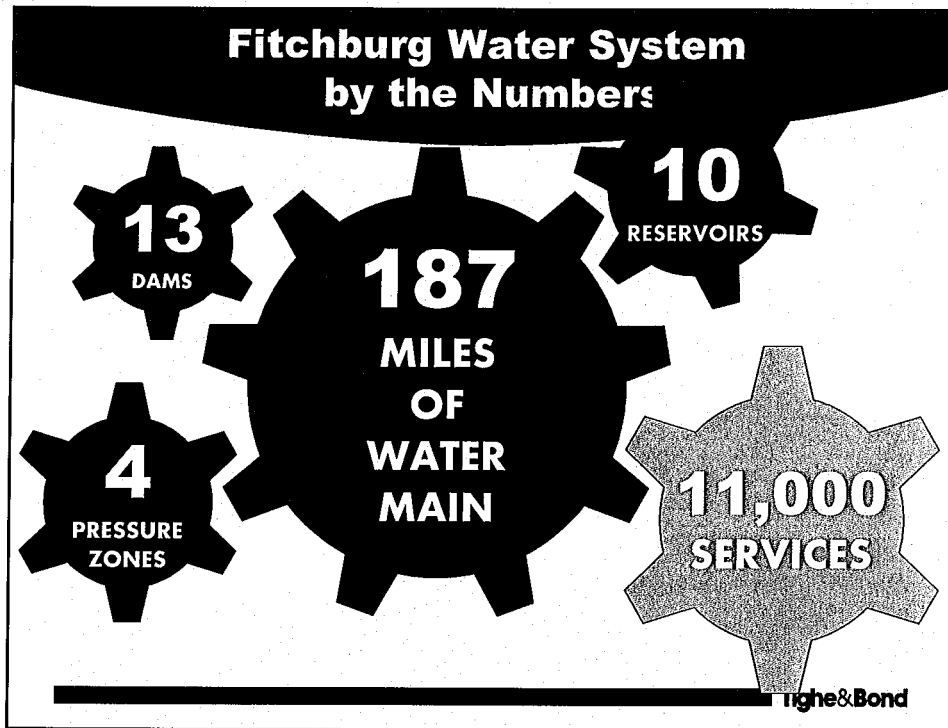
**Mike Schrader, P.E.**, Project Manager

**Tighe&Bond**

## **Why rates need to increase**

- **Last increase: 7% in 2011**
- **Since then**
  - Expenses have increased at 2% per year
  - Consumption has decreased by 6% per year
  - Revenue essentially flat (0.2% increase per year)
  - DEP notice of non compliance (NON)
    - » 14 violations, 24 deficiencies, 21 recommendations
- **Drivers**
  - Water quality
  - Capital improvements
    - » Required by DEP
    - » Required by age and condition
- **Level of service declining**

**Tighe&Bond**



## **Rate Making Objectives**

**To develop a sustainable financial model**

■ **Accounts for**

- Operating expenses
- Debt Service
- Infrastructure repair and replacement

■ **Based upon repeating revenues**

■ **Maintains sufficient reserves**

■ **Process is transparent, informed and defensible**

■ **Rates are fair and equitable**

**Tighe&Bond**

## **Usage**

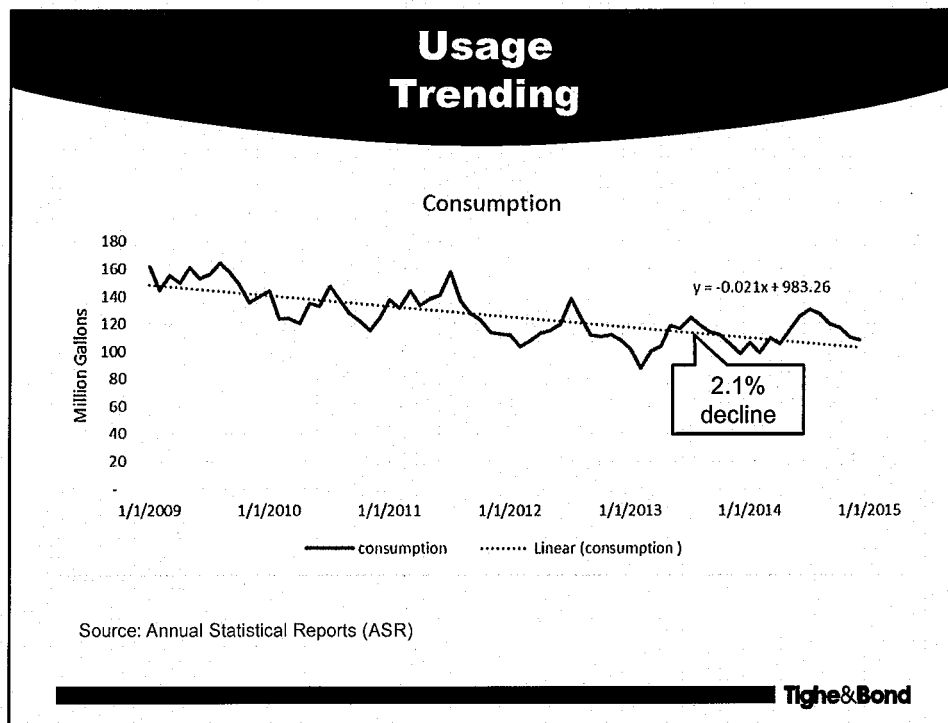
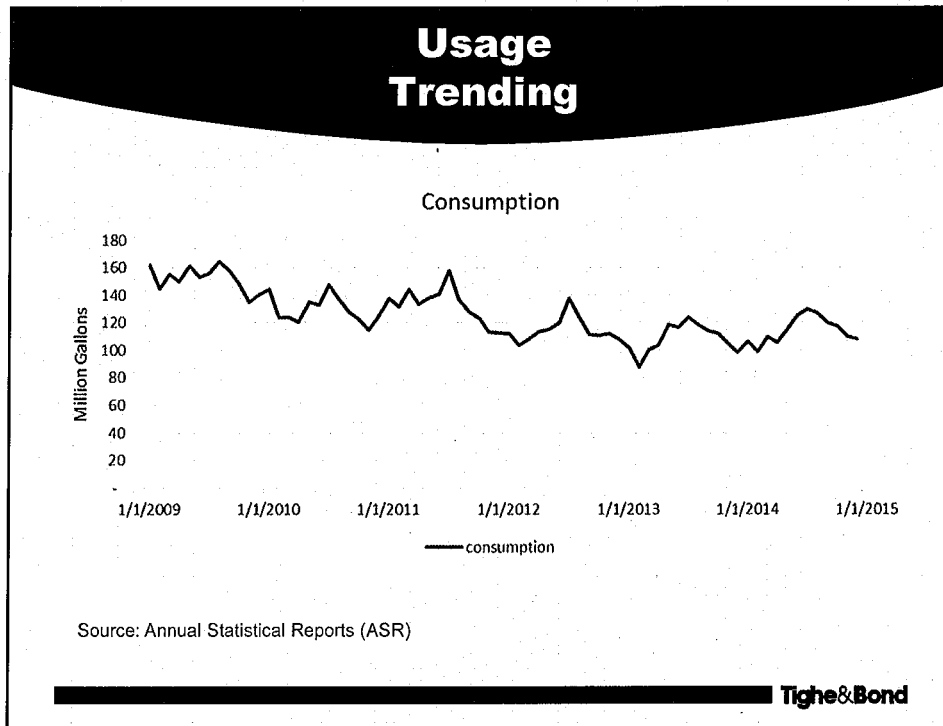
■ **Usage (or consumption) is the primary source of revenue for a water utility**

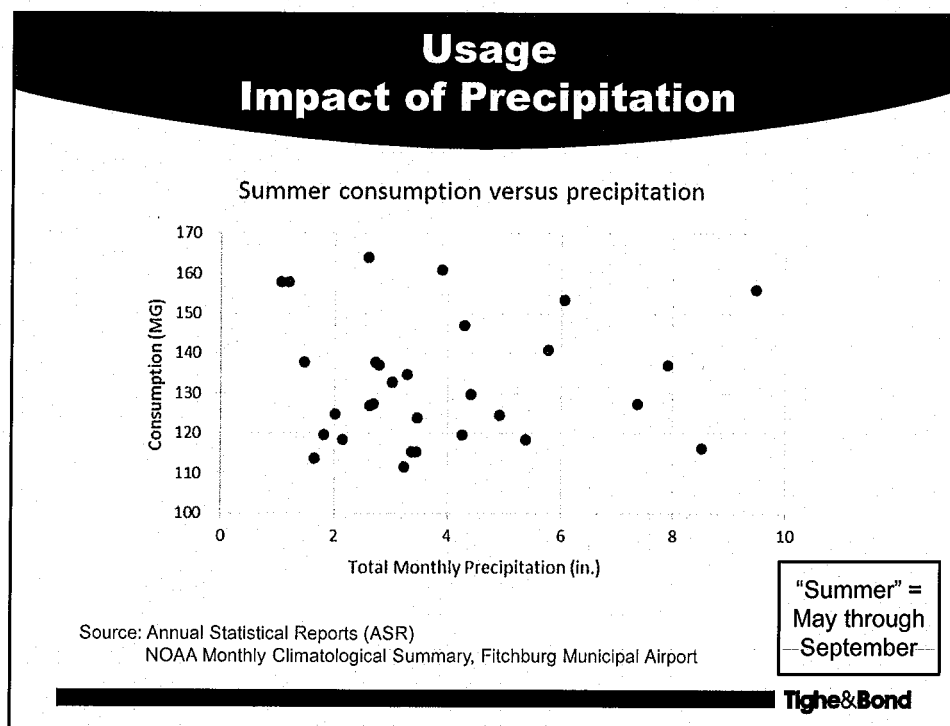
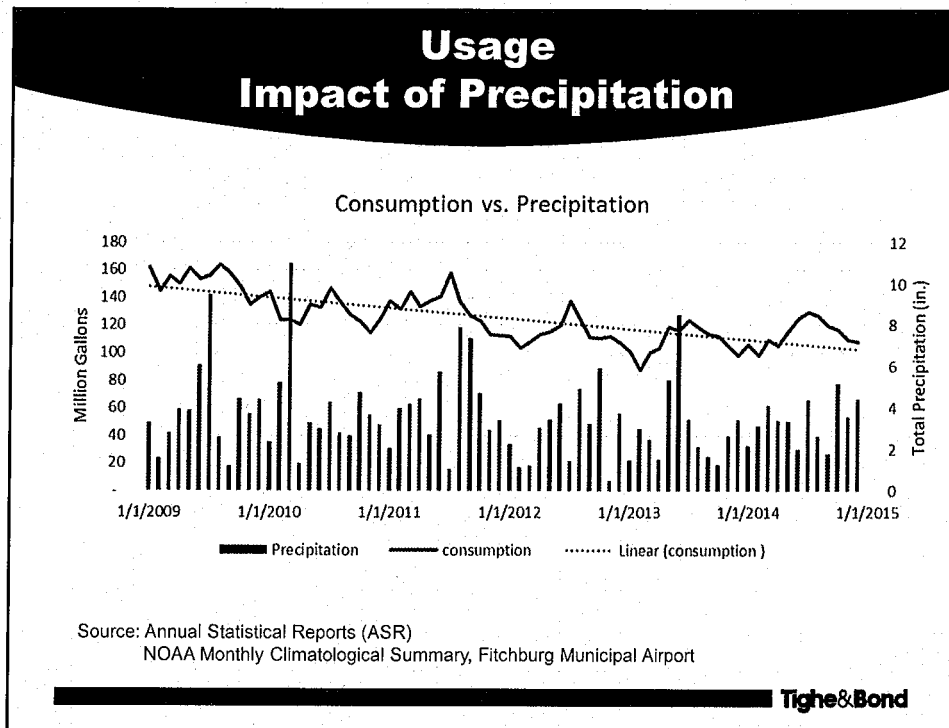
■ **Usage can be impacted by**

- Weather
- Population trends
- Conservation

■ **To project revenue we project consumption**

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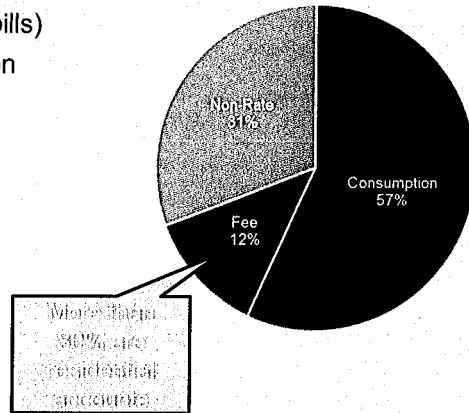


## Revenue

### Where does money come from?

#### ■ Revenue Types

- Rate Revenue (water bills)
  - » Consumption portion
  - » Fixed Charge
- Non Rate Revenue
  - » Service charges
  - » Connection fees
  - » Grants
  - » Donations



















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## Historic Revenue

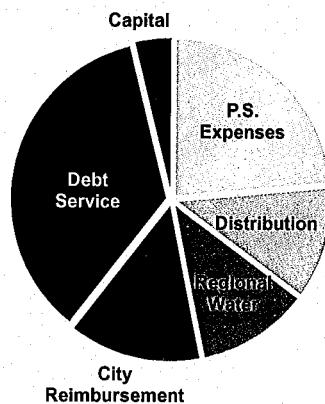
Revenue Source	2008	2009	2010	2011	2012	2013	2014	2015
Water Rates	\$ 3,402,309	\$ 3,208,304	\$ 3,431,841	\$ 3,730,841		\$ 3,751,536	\$ 3,735,175	\$ 3,741,283
Tax Title	\$ 38,102	\$ 38,226	\$ 49,899	\$ 37,028	\$ 38,929	\$ 32,445	\$ 28,584	
Interest Tax Title	\$ 6,068	\$ 6,737	\$ 9,056	\$ 8,050	\$ 6,587	\$ 5,140	\$ 6,720	
Service Pipes	\$ 244,547	\$ 253,037	\$ 253,853	\$ 247,398		\$ 250,488	\$ 259,418	\$ 272,335
Miscellaneous	\$ 5,155	\$ 5,470		\$ 1,151	\$ 387	\$ 734	\$ 3,001	\$ 1,518
Investment Income		\$ 6,457	\$ 3,209		\$ 2,408	\$ 1,339	\$ 4,884	\$ 3,240
Interest And Penalty Fees	\$ 64,748	\$ 69,873			\$ 6,853	\$ 7,111	\$ 39,843	
Water Liens	\$ 423,461		\$ 424,305	\$ 406,852	\$ 377,941	\$ 434,896	\$ 434,748	\$ 430,377
City WTF Reimbursement	\$ 130,000	\$ 130,000	\$ 130,000	\$ 130,000	\$ 130,000			
Westminster Reimbursement	\$ 27,084							
WMA Charge	\$ 23,691	\$ 1,729	\$ 29,394	\$ 29,402	\$ 22,645	\$ 31,021		\$ 26,454
Vertzon Lease	\$ 34,389	\$ 11,630	\$ 38,722					
Timber Sales	\$ 38,997	\$ -		\$ 11,530				\$ -
Hydrant Use	\$ 1,600			\$ 1,000	\$ 1,507	\$ 2,675	\$ 2,768	
Federal revenue								
Inspection Fees		\$ 1,487	\$ 1,850	\$ 1,897		\$ 700	\$ 2,025	\$ 2,000
Connection Fees		\$ 70,482	\$ 88,000	\$ 121,117	\$ 50,458	\$ 40,164	\$ 64,428	\$ 62,982
Transfer From Retained Earnings	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 105,000	
<b>Total</b>	<b>\$ 4,645,368</b>	<b>\$ 4,609,380</b>	<b>\$ 4,860,313</b>	<b>\$ 5,106,375</b>	<b>\$ 5,873,853</b>	<b>\$ 5,246,912</b>	<b>\$ 5,285,717</b>	<b>\$ 5,138,973</b>

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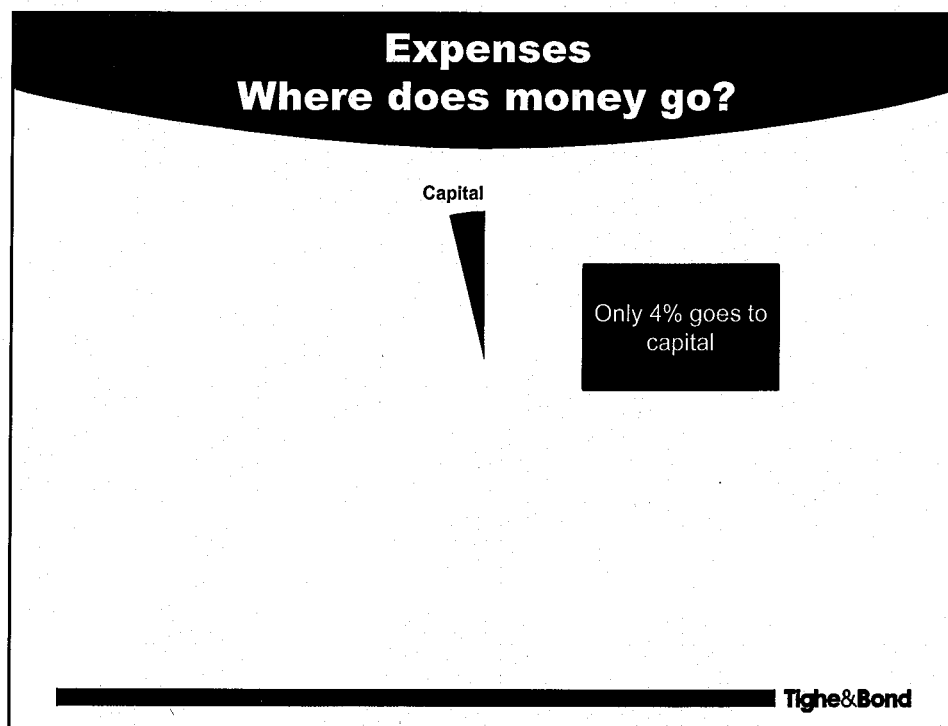
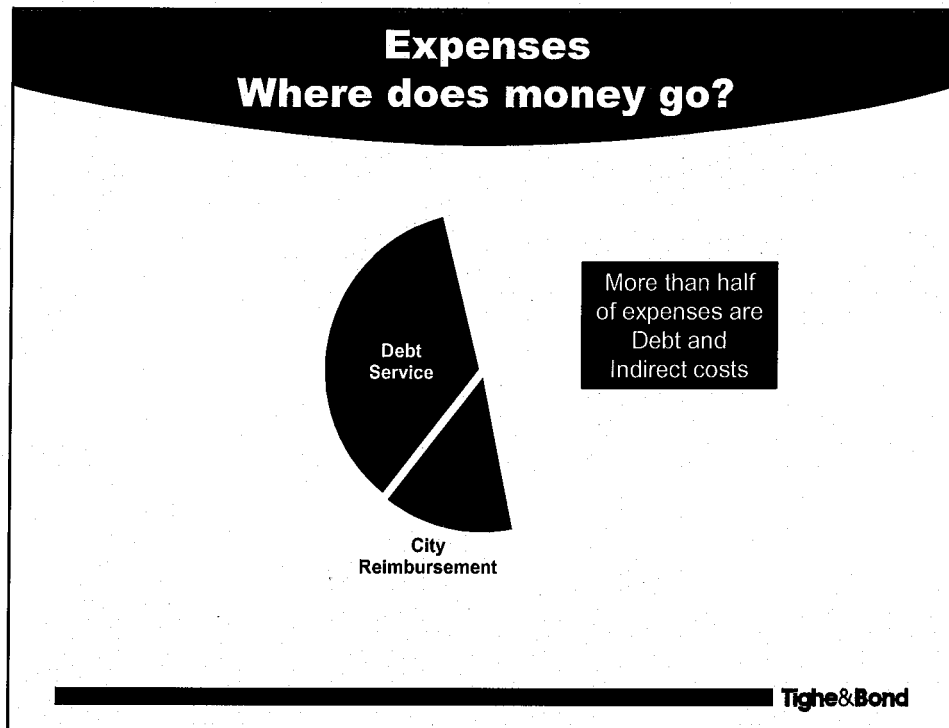
## Projecting Revenue

Revenue Source	2015	Data Analysis		Projection		
		Average	Trending	Base	Annual Change	change as %
Water Rates	\$ 3,741,283	\$ 3,687,847				
Tax Title		\$ 42,547		\$ 30,000	\$ (2,000)	↓ -6.7%
Interest Tax Title		\$ 7,624		\$ 12,648	\$ 1,000	→ 7.9%
Service Pipes	\$ 272,313	\$ 258,382		\$ 272,313	\$ 2,000	→ 0.7%
Miscellaneous	1,518	\$ 5,443		\$ 3,000	\$ -	↓ 0.0%
Investment Income	\$ 3,240	\$ 19,512		\$ 3,240	\$ -	↓ 0.0%
Interest And Penalty Fees		\$ 68,341		\$ 31,266	\$ (2,500)	↓ -8.0%
Water Liens	\$ 430,377	\$ 436,476		\$ 430,377	\$ -	↓ 0.0%
City WTF Reimbursement		\$ 145,938		\$ 172,500	\$ -	↓ 0.0%
Westminster Reimbursement		\$ 213,945		\$ 254,439	\$ (3,000)	↓ -1.2%
WMA Charge	\$ 26,454	\$ 29,243		\$ 30,000	\$ -	↓ 0.0%
Verizon Lease	\$ 42,511	\$ 42,511		\$ 44,437	\$ -	↓ 0.0%
Timber Sales	\$ -	\$ 45,527		\$ -	\$ -	
Hydrant Use		\$ 3,514		\$ 3,000	\$ 500	↑ 16.7%
Federal revenue				\$ -	\$ -	
Inspection Fees	\$ 2,000	\$ 2,236		\$ 2,000	\$ -	↓ 0.0%
Connection Fees	\$ 62,982	\$ 71,151		\$ 62,982	\$ 2,000	→ 3%
Transfer From Retained Earnings						
<b>Total</b>	<b>\$ 5,138,973</b>					

## Expenses Where does money go?



Tighe & Bond



## Expenses Review and Analysis

Analysis of historic expenses

Type	2008	2009	2010	2011	2012	2013	2014	2015
Secondary Plant Operator (3)	\$ 108,723	\$ 113,045	\$ 110,490	\$ 108,861	\$ 110,470	\$ 110,000	\$ 117,520	\$ 92,041
Sub Total Water P.S.	\$ 1,229,154	\$ 1,236,820	\$ 1,190,508	\$ 1,184,394	\$ 1,241,479	\$ 1,301,451	\$ 1,285,522	\$ 1,327,183
Electricity	\$ 43,039	\$ 45,765	\$ 43,853	\$ 49,394	\$ 37,516	\$ 37,702	\$ 46,575	\$ 54,477
Telephone	\$ 6,429	\$ 5,701	\$ 6,266	\$ 6,313	\$ 6,067	\$ 6,533	\$ 6,243	\$ 6,100
Office Supplies	\$ 5,832	\$ 4,543	\$ 5,638	\$ 4,699	\$ 5,158	\$ 4,304	\$ 6,001	\$ 7,181
Travel & Meetings	\$ 82	\$ 33	\$ 95	\$ 75	\$ 600	\$ 219	\$ 338	\$ 150
Publications & Printing	\$ 1,022	\$ 732	\$ 2,223	\$ 3,308	\$ 6,000	\$ 1,222	\$ 2,358	\$ 3,877
Repair & Maintenance Of Building	\$ 7,185	\$ 6,448	\$ 12,018	\$ 9,455	\$ 11,687	\$ 2,649	\$ 9,599	\$ 3,000
Office Equipment	\$ -	\$ 2,557	\$ 1,832	\$ 2,144	\$ 1,713	\$ 1,985	\$ 1,958	\$ -
Repair & Maintenance Of Equipment	\$ 28,062	\$ 21,179	\$ 22,884	\$ 23,770	\$ 29,270	\$ 24,750	\$ 23,424	\$ 26,332
Heating Fuel	\$ 12,987	\$ 24,936	\$ 27,240	\$ 29,325	\$ 23,272	\$ 26,359	\$ 30,812	\$ 30,115
Gas & Oil	\$ 18,000	\$ 31,517	\$ 28,797	\$ 28,784	\$ 36,099	\$ 34,914	\$ 33,872	\$ 33,057
Automobile	\$ 14,870	\$ 12,330	\$ 13,650	\$ 13,734	\$ 13,086	\$ 14,224	\$ 14,355	\$ 14,092
Lab Supplies & Analytical Services	\$ 15,450	\$ 16,247	\$ 34,061	\$ 26,583	\$ 22,343	\$ 21,204	\$ 22,301	\$ 27,552
Tools & Hardware	\$ 8,266	\$ 7,031	\$ 6,476	\$ 10,980	\$ 10,563	\$ 11,000	\$ 9,976	\$ 14,700
Repair & Maintenance Of Radios	\$ 6,287	\$ 6,012	\$ 6,372	\$ 5,377	\$ 5,319	\$ 5,786	\$ 5,563	\$ 5,595
Bcs/Cold Patch	\$ 8,530	\$ 8,000	\$ 23,078	\$ 7,071	\$ 8,602	\$ 14,781	\$ 10,545	\$ 16,906

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## Projecting Expenses

Analysis of historic expenses

Type	Data Analysis		Projection		
	Average	Trending	Base	annual change	as %
Secondary Plant Operator (3)	\$ 111,923		\$ 125,674	\$ 3,526	▲ 2.81%
Sub Total Water P.S.					
Electricity	\$ 45,188		\$ 50,000	\$ -	▲ 0.00%
Telephone	\$ 6,254		\$ 7,000	\$ -	▲ 0.00%
Office Supplies	\$ 5,739		\$ 7,000	\$ -	▲ 0.00%
Travel & Meetings	\$ 184		\$ 500	\$ -	▲ 0.00%
Publications & Printing	\$ 3,445		\$ 5,000	\$ -	▲ 0.00%
Repair & Maintenance Of Building	\$ 9,427		\$ 20,000	\$ 750	▲ 3.75%
Office Equipment	\$ 1,911		\$ 2,000	\$ -	▲ 0.00%
Repair & Maintenance Of Equipment	\$ 26,075		\$ 35,000	\$ 250	▲ 0.71%
Heating Fuel	\$ 26,013		\$ 30,000	\$ 500	▲ 1.67%
Gas & Oil	\$ 35,421		\$ 35,000	\$ -	▲ 0.00%
Automobile	\$ 14,322		\$ 17,000	\$ -	▲ 0.00%
Lab Supplies & Analytical Services	\$ 26,224		\$ 28,000	\$ 250	▲ 0.89%
Tools & Hardware	\$ 9,877		\$ 12,000	\$ -	▲ 0.00%
Repair & Maintenance Of Radios	\$ 5,874		\$ 6,000	\$ -	▲ 0.00%
Bcs/Cold Patch	\$ 14,499		\$ 15,000	\$ 500	▲ 3.33%

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## Proposed Rates

	Current		Proposed (rate increase shown in blue)			
	2016		17% 2017	8% 2018	5% 2019	0% 2020
<b>Consumptive use charge</b>	\$ 3.16	\$	\$ 3.70	\$ 4.00	\$ 4.20	\$ 4.20
<b>Minimum monthly charge</b>						
5/8" Meter	\$ 5.34	\$	\$ 6.25	\$ 6.75	\$ 7.09	\$ 7.09
3/4" Meter	\$ 5.34	\$	\$ 6.25	\$ 6.75	\$ 7.09	\$ 7.09
1" Meter	\$ 5.34	\$	\$ 6.25	\$ 6.75	\$ 7.09	\$ 7.09
1.5" Meter	\$ 16.80	\$	\$ 19.66	\$ 21.24	\$ 22.31	\$ 22.31
2" Meter	\$ 25.20	\$	\$ 29.49	\$ 31.85	\$ 33.45	\$ 33.45
3" Meter	\$ 48.00	\$	\$ 56.16	\$ 60.66	\$ 63.70	\$ 63.70
4" Meter	\$ 73.60	\$	\$ 86.12	\$ 93.01	\$ 97.67	\$ 97.67
6" Meter	\$ 145.20	\$	\$ 169.89	\$ 183.49	\$ 192.67	\$ 192.67
8" Meter	\$ 230.80	\$	\$ 270.04	\$ 291.65	\$ 306.24	\$ 306.24

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## Comparisons to other communities

Average Monthly Water Bill for Family of Four - Current and Proposed Rates  
City of Fitchburg D.P.W. - Water Division

Community	Billing Cycle	Number of Customers	Last Rate Change	Average Monthly Bill for Family of Four (assuming 75 gpd/person)
Clinton	Quarterly	4,100	2007	\$33.33
Fitchburg	Monthly	11,000	2011	\$37.03
Fitchburg	Monthly	11,000	2016 (+17%)	\$43.25
Worcester	Quarterly	42,000	2015	\$44.70
Leominster	Quarterly	12,190	2012	\$44.95
Fitchburg	Monthly	11,000	2017 (+8%)	\$46.75
Fitchburg	Monthly	11,000	2018 (+5%)	\$49.09
Lancaster	Quarterly	1,820	2013	\$53.64
Gardner	Quarterly	5,600	2012	\$57.20
Lynnburg Water Dist.	Quarterly	2,342	2010	\$57.20
Westminster	Quarterly	1,267	2012	\$58.34
Winchendon	Bi-annually	2,000	2015	\$62.39
Ashburnham	Quarterly	1,125	2014	\$73.67

gpd - gallons per day

NOTE: TABLE IS ORGANIZED FROM LOWEST AVERAGE MONTHLY BILL TO HIGHEST AVERAGE MONTHLY BILL.

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## Comparisons to other communities

Average Monthly Water Bill for Single Person - Current and Proposed Rates  
City of Fitchburg D.P.W. - Water Division

Community	Billing Cycle	Number of Customers	Last Rate Change	Average Monthly Bill for Single Person (assuming 75 gpd/person)
Fitchburg	Monthly	11,000	2011	\$8.50
Fitchburg	Monthly	11,000	2016 (+17%)	\$9.95
Fitchburg	Monthly	11,000	2017 (+8%)	\$10.75
Fitchburg	Monthly	11,000	2018 (+5%)	\$11.29
Worcester	Quarterly	42,000	2015	\$12.30
Leominster	Quarterly	12,190	2012	\$13.63
Lancaster	Quarterly	1,820	2013	\$15.61
Gardner	Quarterly	5,600	2012	\$15.78
Winchendon	Bi-annually	2,000	2015	\$16.85
Ashburnham	Quarterly	1,125	2014	\$18.75
Clinton	Quarterly	4,100	2007	\$18.87
Westminster	Quarterly	1,267	2012	\$19.84
Lunenburg Water Dist.	Quarterly	2,342	2010	\$23.60

gpd - gallons per day

NOTE: TABLE IS ORGANIZED FROM LOWEST AVERAGE MONTHLY BILL TO HIGHEST AVERAGE MONTHLY BILL.

**Tighe&Bond**

## Rate Impacts Residential User

	2017	2018	2019
Consumption	\$ 44	\$ 24	\$ 16
Base Charge	\$ 11	\$ 17	\$ 21
Total	\$ 55	\$ 41	\$ 37

Total **incremental** impact on residential users from year to year.

**Tighe&Bond**

## The need for Capital Improvements

- Capital Improvement Plans have been underfunded
- Fitchburg Owns Significant Assets

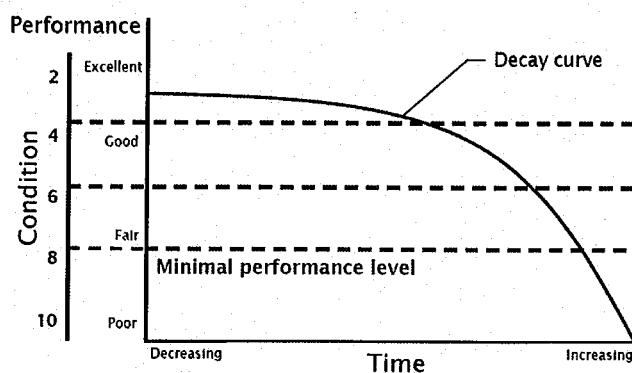
- Treatment Facilities	\$34.6M
- Pump Stations	\$1.4M
- Reservoir Structures and Equipment	\$6.5M
- Storage Tanks	\$4.0M
- Meter Reading Equipment	\$1.1M
- Equipment and Vehicles	\$0.7M
- Water Mains	\$23.9M

Total, all assets \$56,440,554

These are book value, NOT original or replacement cost

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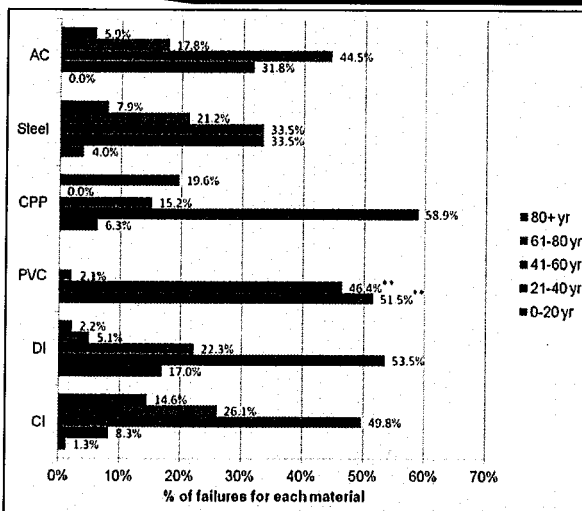
## Asset Life and Condition Decay



ALL equipment has an expected life  
Ranging from 20 – 100 years

**Tighe&Bond**

## Distribution System Failure Rates



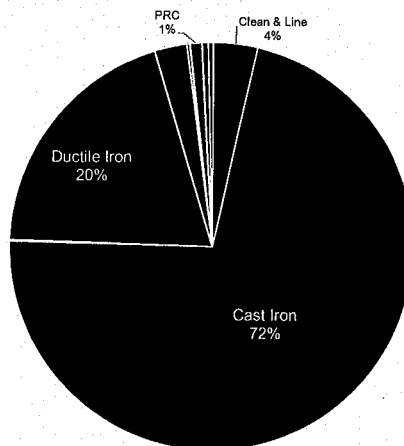
Age is no longer considered to be the primary indicator for pipe replacement.

Maturation of the industry has shown it is a combination of installation date and material type.

Source: Water Main Break Rates in the USA and Canada: A Comprehensive Study  
April 2012 Utah State University Buried Structures Laboratory | Steven Folkman, Ph.D., P.E.

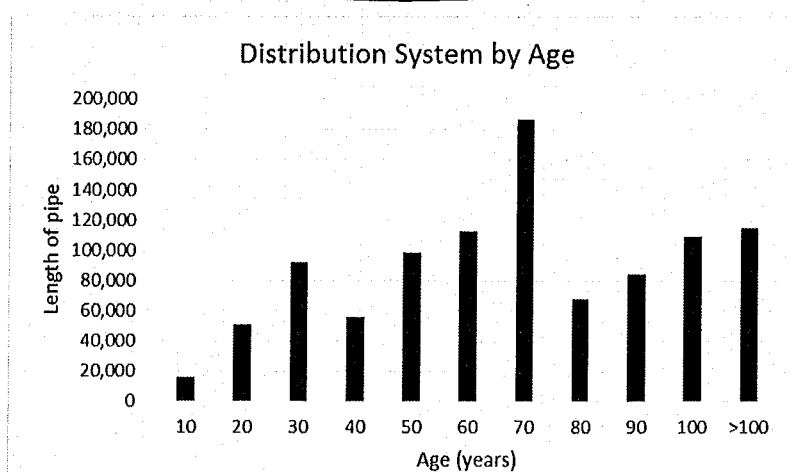
**Tighe&Bond**

## Fitchburg's Distribution System



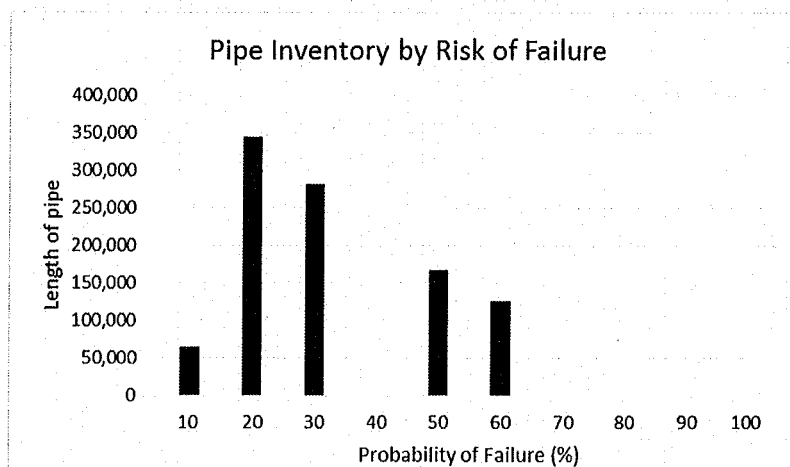
**Tighe&Bond**

## Fitchburg's Distribution System



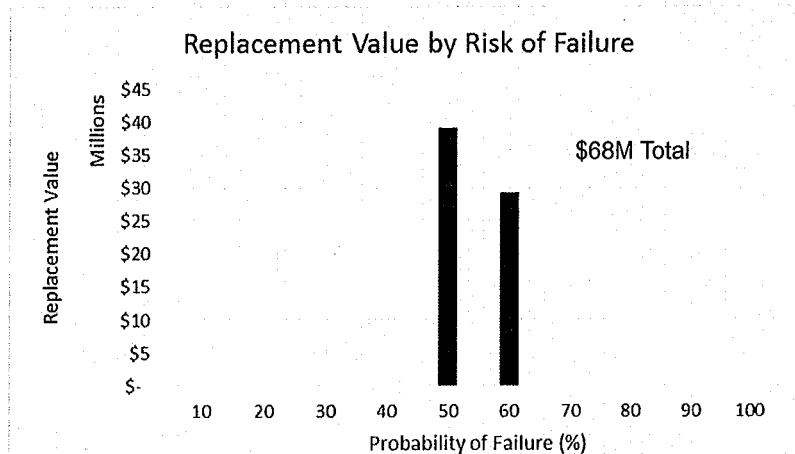
Tighe&Bond

## Fitchburg's Distribution System



Tighe&Bond

## Fitchburg's Distribution System



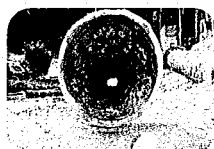
Tighe&Bond

## Pipes fail in various ways

- **Structural failure (break)**
  - Can be caused by
    - » Over pressurization
    - » Corrosion
    - » Severe weather conditions
    - » Settlement
- **Hydraulic failure**
  - Loss of C-Factor
  - Inability to meet needed fire flow
- **Water quality failure**
  - Pipes cannot be sufficiently cleaned or maintained

Tighe&Bond

## Non Structural Failure Cast Iron Pipe



Almount Road



Blossom Street



Blossom Street



Almount Road



Oak Hill Road

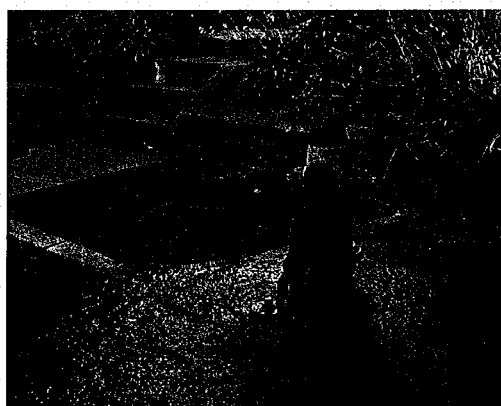
Unlined cast iron pipes become tuberculated over time significantly reducing hydraulic capacity and making it more difficult to maintain water quality.

**Tighe&Bond**

## Impacts on Water Quality



Unlined cast iron pipes become tuberculated over time significantly reducing hydraulic capacity and making it more difficult to maintain water quality.

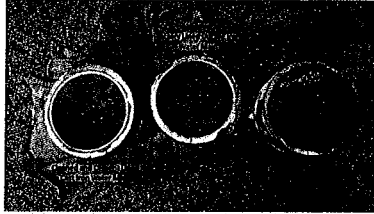


**Tighe&Bond**

## Fixing the System

### ■ Water mains

- If they are the right size we can rehabilitate them
- If they are not the right size we must replace them



#### Cleaning and lining

- Trenchless construction, access pits every 500' +/-
- Mechanical scrapers remove tuberculation
- Cement mortar lining installed in line
- Hydrants and valves replaced
- Saves 20% - 30% over new pipe

**Tighe&Bond**

## Proposed Rates Fund Capital Improvements

Rate increase	0%	0%	0%	17%	8%	5%	0%
Revenue	2014	2015	2016	2017	2018	2019	2020
Consumption	\$ 3,143,844	\$ 3,348,724	\$ 3,335,314	\$ 3,891,821	\$ 4,132,732	\$ 4,386,869	\$ 4,371,304
Fee	\$ 796,670	\$ 803,639	\$ 810,453	\$ 956,588	\$ 1,041,916	\$ 1,103,632	\$ 1,113,105
Non-Rate	\$ 1,530,542	\$ 941,825	\$ 941,825	\$ 941,825	\$ 941,825	\$ 941,825	\$ 941,825
<b>Total</b>	<b>\$ 5,471,056</b>	<b>\$ 5,092,193</b>	<b>\$ 5,087,592</b>	<b>\$ 5,790,234</b>	<b>\$ 6,116,473</b>	<b>\$ 6,432,406</b>	<b>\$ 6,426,234</b>
Expenses	\$ 5,457,067	\$ 5,368,968	\$ 5,635,663	\$ 5,697,739	\$ 5,353,396	\$ 6,022,637	\$ 6,062,353
Balance	\$ 13,989	\$ (276,775)	\$ (608,091)	\$ (107,505)	\$ 217,087	\$ 409,769	\$ 343,880
Retained Earnings			\$ 541,013	\$ 433,508	\$ 500,000	\$ 500,000	\$ 500,000
Capital Improvements				\$ 350,000	\$ 500,595	\$ 759,769	\$ 693,880

**Tighe&Bond**

## Capital Planning

- **The current capital plan is based upon known deficiencies that must be addressed**
  - Low hanging fruit
- **Future capital projects will be planned using risk based decision making process**
  - Not all failures have the same consequences
    - » Critical users
    - » Number of customers affected
    - » Potential damages

Tighe&Bond

## Looking Ahead Thinking Ahead

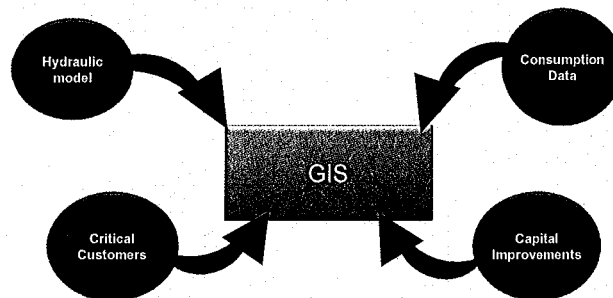
- **Three new tools will improve efficiency and decision making**
  1. GIS: will improve access to information
    - » In the field – no more driving back to get copies of plans
    - » In the office – GIS is both a hub and a tool
  2. Hydraulic Model: Detailed system analysis
    - » Locate areas with deficient fire flows
    - » Establish hydraulic efficiency pipe by pipe
  3. Risk Based Capital Improvement Plan
    - » Uses likelihood and consequence of failure to prioritize
    - » Incorporates City values

Tighe&Bond

## GIS

### 1. GIS: will improve access to information

- » In the field – no more driving back to get copies of plans
- » In the office – GIS is both a hub and a tool

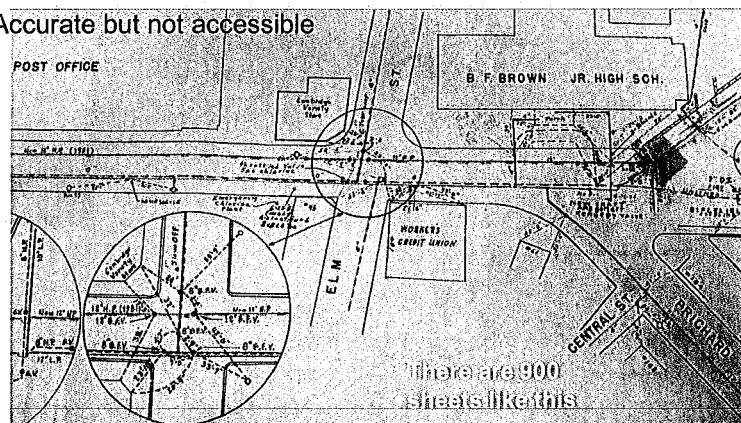


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## GIS

### ■ Existing Data

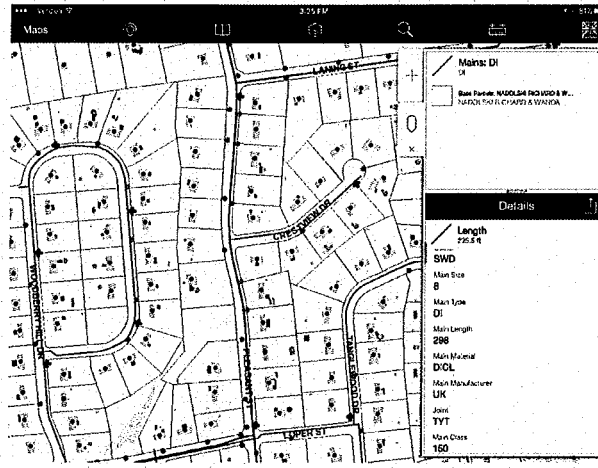
- Accurate but not accessible



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## GIS

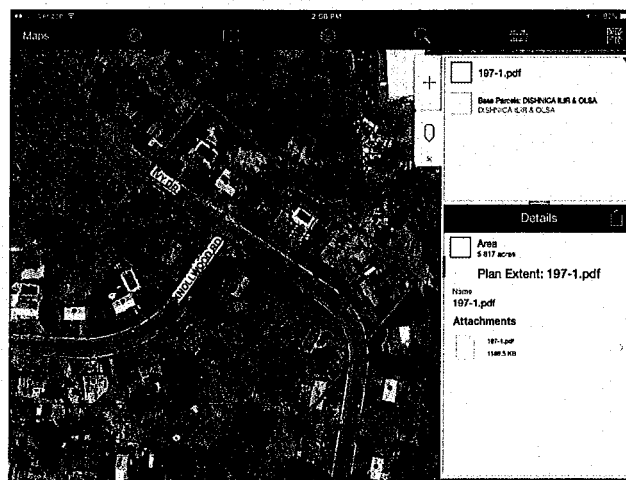
- Easy Access
- Ability to query data
- Remote access to tie cards and record drawings



**Tighe&Bond**

## GIS

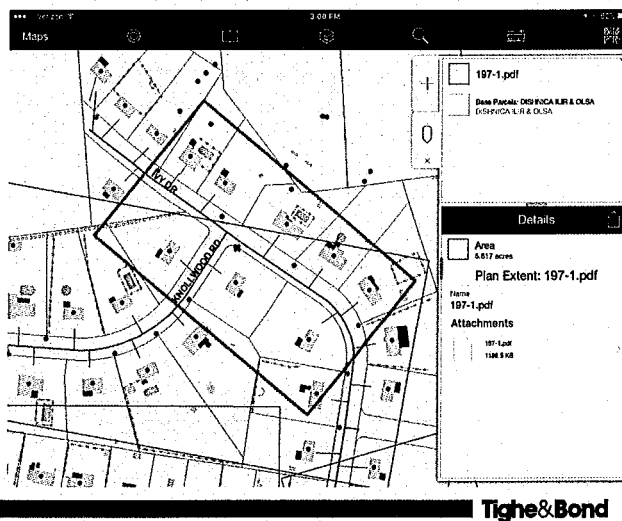
- Easy Access
- Ability to query data
- Remote access to tie cards and record drawings



**Tighe&Bond**

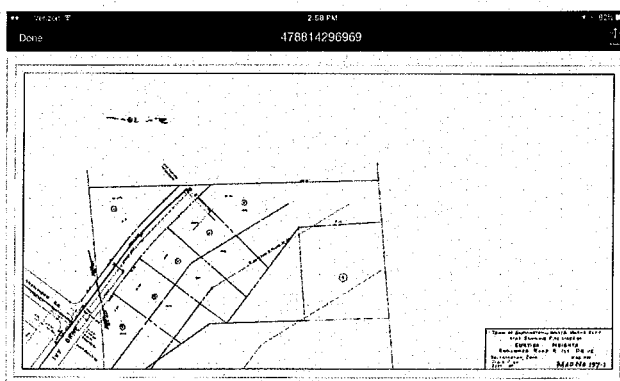
## GIS

- Easy Access
- Ability to query data
- Remote access to tie cards and record drawings



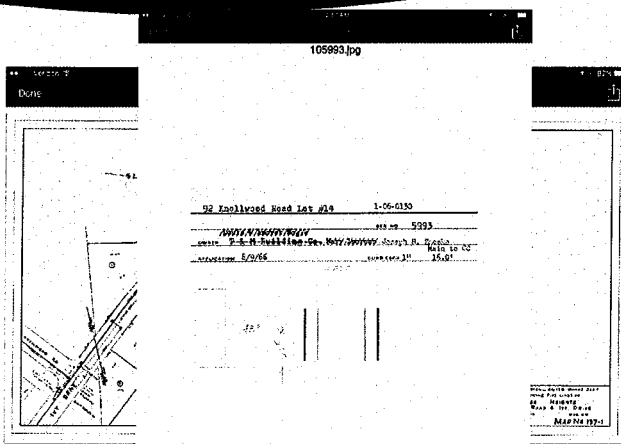
## GIS

- Easy Access
- Ability to query data
- Remote access to tie cards and record drawings



## GIS

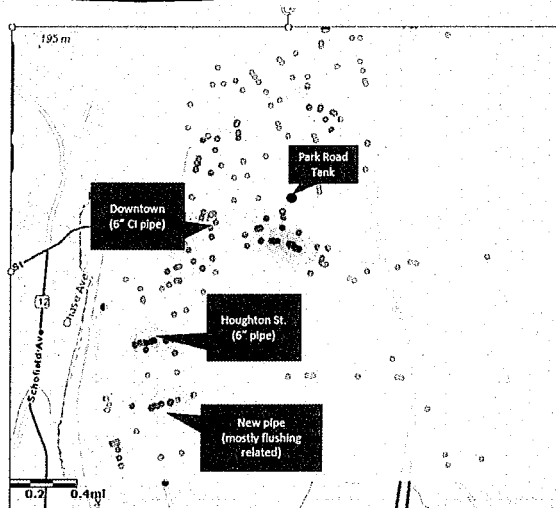
- Easy Access
- Ability to query data
- Remote access to tie cards and record drawings



**Tighe&Bond**

## GIS

- Track and analyze complaint data

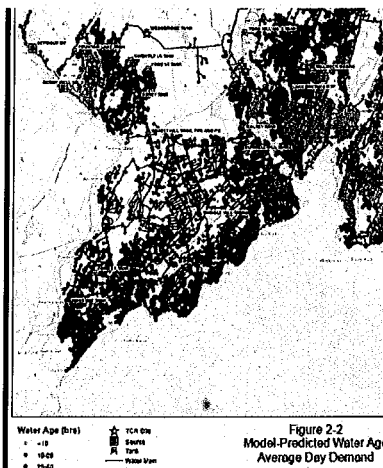


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## Hydraulic Model

### ■ Hydraulic model:

- Diagnose system
  - » Fire flows
  - » Loss of capacity
  - » Age of water
- "Test" improvements



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## Risk Based CIP

CAP-Tool

Copyright 2010 Tighe & Bond

CAPE 1001										Failure Modes										Estimated Service Life (YRS)									
Comprehensive Asset Data High/Low										952,020.00 ft										112.0									
Inventory - Mains (Enterprise)										180.46 mi										2.8									
										3.0										2.8									
										2.8										2.3									
										2.8										2.75									
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## Risk Based CIP

GIS

GIS

**CAP-Tool**  
Comprehensive Asset Management

952,020.00 ft  
180.46 mi

Inventory - Mains (Enterprise)

Acct. No.	Location	Diam (in)	Mat'l	Length (ft)	Year Inst.	Asset type	Cohort	Estimated Service Life (YRS)	Condition Rating (Hyd model)	Water Quality Cond Rating	Breakage History Rating	Failure Modes						
												5	5	5	15			
												3.8	2.8	2.8	2.34	2.75	2.75	2.75
1001	MAIN ST	16	DI	730	1978	16-DI	16-DI-1978	110	3	2	2	2.33	3.8	4	4	4	4	
1002	RIVER ST	16	DI	350	1932	16-DI	16-DI-1932	110	3	1	1	1.67	4.0	4	4	4	4	
1003	AUTHORITY DR	12	DI	4935	1976	12-DI	12-DI-1976	110	3	2	1	2.00	4.0	4	4	4	4	
1004	DEVELOPMENT RD	12	DI	1075	1976	12-DI	12-DI-1976	110	3	2	3	2.67	4.0	4	4	4	4	
1005	BLUEBERRY LN	12	DI	445	1978	12-DI	12-DI-1978	110	3	1	1	1.67	3.9	4	4	4	4	
1006	MAIN ST	12	DI	1490	1979	12-DI	12-DI-1979	110	3	2	2	2.33	4.0	4	4	4	4	
1007	DANIELS ST	12	DI	1670	1979	12-DI	12-DI-1979	110	3	1	2	2.00	4.3	4	4	4	4	
1008	PRINCETON RD	12	DI	2500	1980	12-DI	12-DI-1980	110	3	3	1	2.33	4.0	4	4	4	4	
1009	ACADEMY ST	12	DI	700	1981	12-DI	12-DI-1981	110	3	2	1	2.00	3.9	4	4	4	4	
1010	HIGH ST	12	DI	2400	1985	12-DI	12-DI-1985	110	3	1	1	1.67	4.3	4	4	4	4	
1011	LUNEBURG ST	12	DI	1390	1987	12-DI	12-DI-1987	110	3	2	1	2.00	4.1	4	4	4	4	
1012	ST CAMILLE ST	12	DI	150	1936	12-DI	12-DI-1936	110	3	1	3	2.33	4.0	4	4	4	4	
1013	LUNEBURG ST	12	DI	1070	1930	12-DI	12-DI-1930	110	3	2	3	2.67	3.9	4	4	4	4	
1014	DANIELS ST	12	DI	486	1930	12-DI	12-DI-1930	110	3	2	3	2.67	4.2	4	4	4	4	
1015	St Camille Street	12	DI	1640	1933	12-DI	12-DI-1933	110	3	1	1	1.67	4.1	4	4	4	4	
1016	RIVER ST	10	DI	350	1932	10-DI	10-DI-1932	110	3	3	1	2.33	3.2	3	3	3	3	
1017	Brown Road	10	DI	350	1933	10-DI	10-DI-1933	110	3	3	2	2.67	3.2	3	3	3	3	
1018	WHITEMORE ST	8	DI	1411	1975	8-DI	8-DI-1975	110	3	2	3	2.67	2.8	3	3	3	3	
1019	MAYLAND ST	8	DI	335	1977	8-DI	8-DI-1977	110	3	2	1	2.00	2.7	3	3	3	3	
1020	EAST ST	8	DI	820	1978	8-DI	8-DI-1978	110	3	3	3	3.00	3.2	3	3	3	3	
1021	DOUGLASS ST	8	DI	1115	1978	8-DI	8-DI-1978	110	3	2	1	2.00	3.3	3	3	3	3	
1022	KNIVELTON TERRACE	8	DI	280	1978	8-DI	8-DI-1978	110	3	2	2	2.33	3.3	3	3	3	3	
1023	MICHAEL ST	8	DI	720	1978	8-DI	8-DI-1978	110	3	2	3	2.67	3.3	3	3	3	3	
1024	MT VERNON ST	8	DI	2360	1978	8-DI	8-DI-1978	110	3	3	3	3.00	3.1	3	3	3	3	
1025	OLIVER ST	8	DI	795	1978	8-DI	8-DI-1978	110	3	2	1	2.00	2.9	3	3	3	3	
1026	TILTON ST	8	DI	235	1978	8-DI	8-DI-1978	110	3	1	3	2.33	3.2	3	3	3	3	
1027	CLEGGHORN ST	8	DI	35	1979	8-DI	8-DI-1979	110	3	2	3	2.67	2.9	3	3	3	3	
1028	DANIELS ST	8	DI	1310	1979	8-DI	8-DI-1979	110	3	1	3	2.33	2.8	3	3	3	3	
1029	EDWARD ST	8	DI	50	1979	8-DI	8-DI-1979	110	3	3	3	3.00	2.9	3	3	3	3	

**Tighe & Bond**

# Risk Based CIP

Hyd.  
Model

**CAP-Tool**  
Comprehensive Asset Management

952,020.00 ft  
180.46 mi

Inventory - Mains (Enterprise)

Acct. No.	Location	Diam (in)	Mat'l	Length (ft)	Year Inst.	Asset type	Cohort	Estimated Service Life (YRS)	Failure Modes			Condition Rating (Hyd Model)			
									5	5	5	3.8	2.8	2.8	2.34
1001	MAIN ST	16	DI	730	1978	16-DI	16-DI-1978	110	3	2	2	2.33	3.8	4	4
1002	RIVER ST	16	DI	350	1932	16-DI	16-DI-1932	110	3	1	1	1.67	4.0	4	4
1003	AUTHORITY DR	12	DI	4935	1976	12-DI	12-DI-1976	110	3	2	1	2.00	4.0	4	4
1004	DEVELOPMENT RD	12	DI	1075	1976	12-DI	12-DI-1976	110	3	2	3	2.67	4.0	4	4
1005	BLUEBERRY LN	12	DI	445	1978	12-DI	12-DI-1978	110	3	1	1	1.67	3.9	4	4
1006	MAIN ST	12	DI	1490	1979	12-DI	12-DI-1979	110	3	2	2	2.33	4.0	4	4
1007	DANIELS ST	12	DI	1670	1979	12-DI	12-DI-1979	110	3	1	2	2.00	4.3	4	4
1008	PRINCETON RD	12	DI	2500	1980	12-DI	12-DI-1980	110	3	3	1	2.33	4.0	4	4
1009	ACADEMY ST	12	DI	700	1981	12-DI	12-DI-1981	110	3	2	1	2.00	3.9	4	4
1010	HIGH ST	12	DI	2400	1985	12-DI	12-DI-1985	110	3	1	1	1.67	4.3	4	4
1011	LUNEBURG ST	12	DI	1390	1987	12-DI	12-DI-1987	110	3	2	1	2.00	4.1	4	4
1012	ST CAMILLE ST	12	DI	150	1936	12-DI	12-DI-1936	110	3	1	3	2.33	4.0	4	4
1013	LUNEBURG ST	12	DI	1070	1930	12-DI	12-DI-1930	110	3	2	3	2.67	3.9	4	4
1014	DANIELS ST	12	DI	486	1930	12-DI	12-DI-1930	110	3	2	3	2.67	4.2	4	4
1015	St Camille Street	12	DI	1640	1933	12-DI	12-DI-1933	110	3	1	1	1.67	4.1	4	4
1016	RIVER ST	10	DI	350	1932	10-DI	10-DI-1932	110	3	3	1	2.33	3.2	3	3
1017	Brown Road	10	DI	350	1933	10-DI	10-DI-1933	110	3	3	2	2.67	3.2	3	3
1018	WHITEMORE ST	8	DI	1411	1975	8-DI	8-DI-1975	110	3	2	3	2.67	2.8	3	3
1019	MAYLAND ST	8	DI	335	1977	8-DI	8-DI-1977	110	3	2	1	2.00	2.7	3	3
1020	EAST ST	8	DI	820	1978	8-DI	8-DI-1978	110	3	3	3	3.00	3.2	3	3
1021	DOUGLASS ST	8	DI	1115	1978	8-DI	8-DI-1978	110	3	2	1	2.00	3.3	3	3
1022	KNIVELTON TERRACE	8	DI	280	1978	8-DI	8-DI-1978	110	3	2	2	2.33	3.3	3	3
1023	MICHAEL ST	8	DI	720	1978	8-DI	8-DI-1978	110	3	2	3	2.67	3.3	3	3
1024	MT VERNON ST	8	DI	2360	1978	8-DI	8-DI-1978	110	3	3	3	3.00	3.1	3	3
1025	OLIVER ST	8	DI	795	1978	8-DI	8-DI-1978	110	3	2	1	2.00	2.9	3	3
1026	TILTON ST	8	DI	235	1978	8-DI	8-DI-1978	110	3	1	3	2.33	3.2	3	3
1027	CLEGGHORN ST	8	DI	35	1979	8-DI	8-DI-1979	110	3	2	3	2.67	2.9	3	3
1028	DANIELS ST	8	DI	1310	1979	8-DI	8-DI-1979	110	3	1	3	2.33	2.8	3	3
1029	EDWARD ST	8	DI	50	1979	8-DI	8-DI-1979	110	3	3	3	3.00	2.9	3	3
1030	LEWISTON ST	8	DI	4078	1979	8-DI	8-DI-1979	110	3	3	3	3.00	2.9	3	3

**Tighe & Bond**



## John Deline

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**From:** John Deline  
**Sent:** Tuesday, February 23, 2016 3:58 PM  
**To:** Amy Green; Angelo Bisol; David Clark; Dean Tran; Jeffrey A. Bean; Jody Joseph; Joel Kaddy; Marcus DiNatale; Michael Kushmerek; Paul Beauchemin; Steve Hay  
**Cc:** Stephen DiNatale; AJ Tourigny; Farrell, Anna; Lenny Laakso (LLaakso@fitchburgma.gov); Joan David; Jeff Murawski (JMurawski@fitchburgma.gov); 'Michael J. Schrader'  
**Subject:** Petition to Increase Water Rates - Presentation  
**Attachments:** Fitchburg water rate study.pdf

Good afternoon Councilors,

Attached to this email is a pdf of the presentation that has been developed by our consultants, Tighe & Bond, in conjunction with the water rate study to determine rates/fees which will support the operating costs of the Water Department and also a modest capital improvement budget. I would encourage you to review this presentation in preparation for our meeting on March 8. If you have questions that you would like to ask me beforehand or if there is any additional information that you would like to see included, please do not hesitate to contact me. I would like to note though that, if contacting by email, you should not "reply all" in order to avoid any violations of the Massachusetts open meeting laws. I would also welcome meeting with you in person to answer your questions and discuss your concerns about these proposed rate increases (or any matter pertaining to Fitchburg's water system).

I would like you to know that I have taken this matter very seriously and, with our consultants, spent considerable time and effort studying the city's situation, not just the water system but the financial health of its residents and businesses. I am not going to tell you that this increase will not hurt anyone and that people can afford it because that is not true – any money out of peoples' pockets is that much less they will have for their housing, food, and families. However, the city's water distribution system is falling further and further into disrepair and the only solution is to begin investing more money into upgrading water mains, whether it be cleaning and lining or replacing. There are areas of the distribution system which experience discolored water on a daily basis and no amount of flushing and running of water is going to improve the situation for any length of time beyond the short term – it is only going to get worse. Beyond the water quality issues is the fact that heavily tuberculated water mains restrict flows which reduce the quantity of water that can flow from fire hydrants. In some areas of Fitchburg there are hydrants which are actually useless for fighting a fire because the water mains to which they are connected are so heavily plugged with tuberculation. In addition, because of the age of the piping in the water system, water main breaks are a frequent occurrence which cause significant damage and disrupt service. If the city does not begin investing more in its water system, these problems are going to continue to build and more and more neighborhoods will experience degrading water quality and decreased fire protection. Delaying this type of investment will only push the problems further down the road and, eventually, they will become unmanageable.

For those looking to see where Fitchburg stands relative to other cities and towns in the state in terms of water (and sewer) rates, below is a link to a useful tool for comparing water and sewer rates. You can compare Fitchburg to similarly sized systems in the state and also add percentage increases to see

how that changes the comparison. Here is the link (to open tool select "click to run in browser" and a new window will open): <http://www.efc.sog.unc.edu/reslib/item/massachusetts-water-and-wastewater-rates-dashboard>

The data in the above "tool" is based on the water and sewer rate survey that Tighe & Bond completes each year: <http://rates.tighebond.com/>

Another good source of information is the MWRA rate survey: <http://mwraadvisoryboard.com/wp-content/uploads/2014/12/2-2014-Annual-Water-and-Sewer-Retail-Rate-Survey.pdf>

Finally, here is a rather long/detailed story but one which really tells the tale of the state of drinking water infrastructure throughout the country (Fitchburg's problems are far from unique):

<http://www.cnn.com/2016/02/23/health/louisiana-st-joseph-dirty-water/index.html>

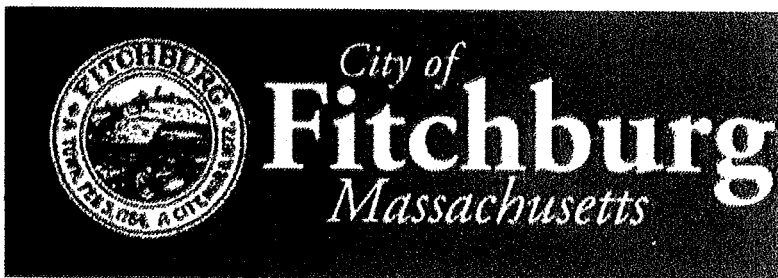
And, in case you did not see it in yesterday's Sentinel, here is another article on a more local level:

[http://www.sentinelandenterprise.com/news/ci\\_29546356/concern-over-brown-water-in-leominster](http://www.sentinelandenterprise.com/news/ci_29546356/concern-over-brown-water-in-leominster)

I will be emailing some additional data/information in the coming days that I believe will be helpful in your decision making process and, again, I would like to welcome you to speak with me if you have any questions.

Thank you,

**John M. Deline, Jr., Deputy Commissioner of Water Supply**  
**Fitchburg DPW – Division of Water Supply**  
**1200 Rindge Road**  
**Fitchburg, MA 01420**  
**978-345-9616 ext. 109**



## John Deline

---

**From:** John Deline  
**Sent:** Monday, February 29, 2016 9:09 AM  
**To:** Amy Green; Angelo Bisol; David Clark; Dean Tran; Jeffrey A. Bean; Jody Joseph; Joel Kaddy; Marcus DiNatale; Michael Kushmerek; Paul Beauchemin; Steve Hay  
**Cc:** Stephen DiNatale; AJ Tourigny; Lenny Laakso (LLaakso@fitchburgma.gov); 'vpusateri@pusaterilaw.com'; Farrell, Anna; 'Michael J. Schrader'  
**Subject:** Video on Water Infrastructure

Good morning Councilors,

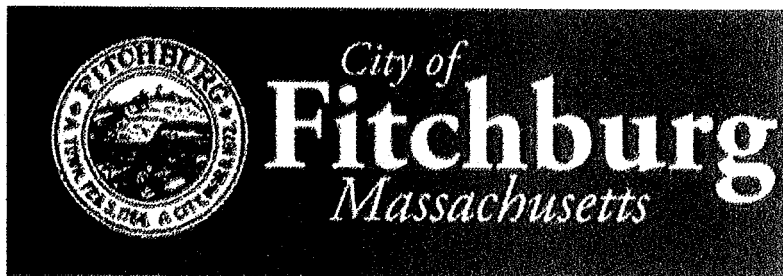
Here is an informative video (it is about 6 minutes long) about water infrastructure across the country and is definitely representative of what Fitchburg's situation is.

Please take the time to watch it – it is on the bottom of the page that I am providing a link to:

<http://www.awwa.org/legislation-regulation/issues/infrastructure-financing.aspx>

Thank you!

**John M. Deline, Jr., Deputy Commissioner of Water Supply**  
**Fitchburg DPW – Division of Water Supply**  
**1200 Rindge Road**  
**Fitchburg, MA 01420**  
**978-345-9616 ext. 109**



## John Deline

---

**From:** John Deline  
**Sent:** Friday, February 26, 2016 2:57 PM  
**To:** 'Amy Green'; 'Angelo Bisol'; 'David Clark'; 'Dean Tran'; 'Farrell, Anna'; 'Jeffrey A. Bean'; 'Jody Joseph'; 'Joel Kaddy'; 'Marcus DiNatale'; 'Michael Kushmerek'; 'Paul Beauchemin'; 'Steve Hay'  
**Cc:** 'Stephen DiNatale'; 'AJ Tourigny'; Lenny Laakso (LLaakso@fitchburgma.gov); 'vpusateri@pusaterilaw.com'; 'Sarasin, Richard'; 'Farrell, Anna'; 'Michael J. Schrader'  
**Subject:** Water Division Capital Improvement Plan for FY2017 through FY2020  
**Attachments:** Water - Capital Improvement Plan - February 2016.pdf; Water Division Loan Payment Schedule.xlsx

Good afternoon Councilors,

In past years the Water Division has completed several capital improvement plans that, due to inadequate funding, were really more of a wish list than something which could be adhered to. This is not to say that work has not been completed in the City's water distribution system since the construction of the treatment facilities, as some water mains have been replaced. However, the length of water mains that have been upgraded has simply not kept pace with what is needed in the system to provide adequate water quality and quantity (for fire protection) to all areas of the city. Approximately one-hundred forty (140) miles of the city's water mains are unlined cast iron pipe (which is the type of water main that is subject to tuberculation) and of those one-hundred forty miles, forty-three miles are more than 90 years old. In today's dollars, the total cost of replacing a water main (including providing temporary water which must be supplied through disinfected/bacteria free piping, excavating the roadway, disposal of asphalt, installation of the new water main, valves, hydrants, and water service lines, and restoration of the roadway, sidewalks, lawn areas, etc.) is approximately \$1,000,000.00 per mile or \$200 per foot. Cleaning and lining of cast iron water mains (only suitable if the water main is not undersized and is also not subject to frequent breaks) is approximately 10-20% less.

With these numbers, it is a bit overwhelming what it would (and will eventually) cost to replace or rehabilitate these many miles of water main. However, these are not the only capital project needs in the water system – the city's two water treatment plants are now 15 years old (Regional Plant) and 10 years old (Falulah facility) and work is needed to maintain and upgrade these facilities. In addition, the dams/spillways (13 dams), reservoirs (10), gatehouses (8), pump stations (7), pressure reducing stations (2), and water storage tanks (7) all require regular maintenance and also some major rehabilitation/upgrades to ensure future reliability of the water supply system.

We will provide greater detail and discussion in the presentation as to what the rate increases will allow in terms of a capital improvement budget but would like to provide these numbers at this time.

Capital improvements budget based on proposed rate increases: FY2017 - \$350,000, FY2018 - \$567,000, FY2019 - \$760,000, FY 2020 - \$694,000

I have also attached a capital improvement plan for FY17-FY20 that presents a total of \$9,920,000.00 in capital improvements over the course of these fiscal years. It is our plan to utilize the proposed budget for capital improvements to leverage low interest loans (each \$1 million in loans equals \$67,000 in loan payments each year at 3% interest over 20 years, we may be able to get 2% loans but wanted to be conservative in my calculations) that will allow this funding level for these years. It will allow us to get a "jump start" on some of the truly pressing projects that are needed while minimizing the increase in water rates (and the impact on our

customers). Even though we are borrowing this money, it allows us to hedge against increases in future construction costs.

So what happens in the future when we have borrowed this money and still need to continue to make capital improvements to the city's water system. In 2022, the Water Division will see its loan payments on the treatment facilities, storage tanks, etc. (the borrowing totaled approximately \$34 million for this work) drop from approximately \$1.8 million per year to \$860,000 per year, providing an additional \$900K toward water system improvements. Additional loans will be paid off from 2022-2033, providing more funding for capital improvements – I have attached the schedule of principal and interest payments for your review.

With these loans being retired, the additional funds will enable the Water Division to continue to invest significant monies in much needed capital improvements. It will not allow us to upgrade/replace all of the water mains that are in poor condition in as short a time frame as we would really like to see but does put the city on a better track than where we stand today.

I would again like to welcome you all to send me any questions that you may have or, if you prefer, I would be happy to meet with you. Also, if any would like to have a tour of any or even all of our facilities, reservoirs, etc. I would certainly enjoy the opportunity to spend some time with you looking at what the Water Division is responsible for. Just to put it in perspective, when MA DEP conducts a detailed inspection (called a Sanitary Survey, which is completed every 2-3 years) of the Water Division's treatment plants and facilities, it takes two people (from MA DEP) about a week to visit and inspect everything.

Thank you,

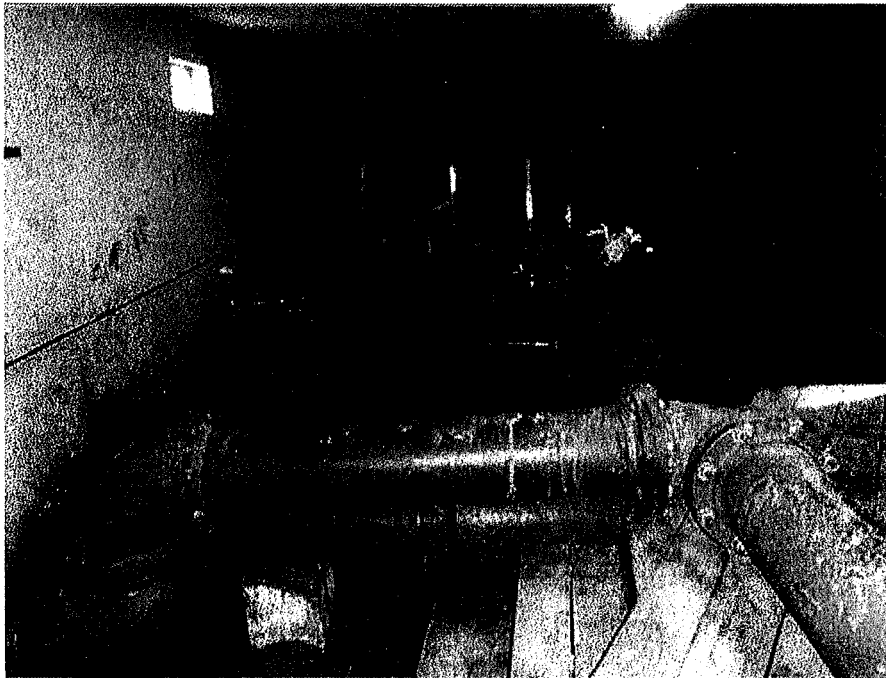
**John M. Deline, Jr., Deputy Commissioner of Water Supply**  
**Fitchburg DPW – Division of Water Supply**  
**1200 Rindge Road**  
**Fitchburg, MA 01420**  
**978-345-9616 ext. 109**



*Here is a picture of a cement-lined ductile iron water main next to a tuberculated cast iron. Cement-lined ductile iron water main is much stronger than cast iron (cast iron is much more "brittle" than ductile iron which can "give" a bit). All of our water main breaks are associated with cast iron water mains. We estimate that 40 to 60 miles of the city's water mains look like the one on the right.*



*The below picture shows a portion of the interior of the Narrows Road Pressure Reducing Station. Approximately 2/3 of the city's water is supplied through this piping. The roof on this building is in very poor condition and, overall, the building needs a complete rehabilitation along with piping improvements.*



# CAPITAL IMPROVEMENT PLAN - FEBRUARY 2016

## FITCHBURG D.P.W. - DIVISION OF WATER SUPPLY

Fiscal Year	Project	Need	Cost
FY 2017	Upgrade of control panels/computers/SCADA system at Regional and Falulah facilities, including changeover of telephone communication to radio systems at storage tanks, pump stations, and pressure reducing stations.	Equipment/technology is outdated and unreliable, replacement parts are no longer manufactured/supported, SCADA computers are running on Windows XP. Also needed to improve security from cyber threats.	\$400,000.00
	Demolish Burbank Hospital Chlorination Building	Building's structure is failing/collapsing and a liability to the city. It is no longer needed (it is only 12' X 12', with transmission main in basement.)	\$10,000.00
	Repair sluice gate at Fitchburg Reservoir gatehouse	Outlet gate controlling flow from Fitchburg Res. to Lovell Res. is broken partially open.	\$60,000.00
	Clean exterior, inspect, and coat Falulah storage tanks, install security fencing as required by MA DEP.	Tanks have significant mildew, moss etc. development/growth, cleaning/inspection/coating of the exteriors is needed to prevent deterioration of concrete structure.	\$200,000.00
	Install mixers in each of the water storage tanks to prevent the formation of ice (which damages the interior of the tanks) and improve water quality.	Formation of ice in storage tanks damages interior coatings and concrete structure, wear occurs as water levels fluctuate. Ice also reduces amount of water for fires. Mixers also significantly improve water quality and reduce formation of disinfection byproducts, particularly during summer months.	\$250,000.00
<b>TOTAL</b>			<b>\$920,000.00</b>
FY 2018	Replace or clean and line 10,500 feet (approx. 2 miles) of water main (\$200/ft) - list of water mains is below:  Beacon St (600'), Berkley St (280'), Bond St (1,070'), Brigham Park (710'), Dudley St ( 170'), Fitch Hill Ave (1,370'), Haskell St (700'), Highview St (640'), Lennox St (440'), Longwood Ave (265'), Lovisa St (535'), Newport St (255'), Pershing St (410'), Shea St (1,645'), View St (890'), Winch St (520')	Poor water quality and limited fire protection due to heavily tuberculated water mains.	\$2,100,000.00
	Rehabilitation of Narrows Road pressure reducing station (cut and cap transmission mains from Wachusett Reservoir/Wyman Pond as required by MA DEP), rehabilitate Mare Meadow and Bickford pump stations and Marshall Regulating Plant (replacement of roofs, upgrade of electrical/mechanical/and piping systems).	Buildings are in desperate need of rehabilitation, including complete roof replacements on all structures. Pump and piping upgrades are needed to ensure the reliability of these facilities to continue to operate and provide water to the City. This work is needed to mitigate MA DEP noncompliance/deficiency notices.	\$600,000.00
	Installation of new water meters and electronic registers on all residential service lines (+/- 10,000) - Phase 1 of 3, total cost of project is expected to be \$3,600,000.00 (Water's expectation is that Wastewater will share in cost 50/50).	Water meters are 20-30 years old and, due to age, are now underregistering and failing. The electronic registers have a battery life of 7-12 years and are now 10 years old with frequent failures.	\$600,000.00
<b>TOTAL</b>			<b>\$3,300,000.00</b>
FY 2019	Rehabilitate Meetinghouse Gatehouse and traveling screens or extend intake and eliminate building. Install security fencing as required by MA DEP.	Meetinghouse is the reservoir through which all water to the Regional Plant flows from the City's southern reservoirs. It is in deteriorating condition and MA DEP has cited the building equipment as being deficient. Upgrade/rehabilitation is needed in the near future to ensure that this intake will remain useable.	\$500,000.00
	Replace or clean and line 10,000 feet (approx. 2 miles) of water main (\$200/ft)	Poor water quality and limited fire protection due to heavily tuberculated water mains.	\$2,000,000.00
	Installation of new water meters and electronic registers on all residential service lines (+/- 10,000) - Phase 2 of 3, total cost of project is expected to be \$3,600,000.00 (Water's expectation is that Wastewater will share in cost 50/50).	Water meters are 20-30 years old and, due to age, are now underregistering and failing. The electronic registers have a battery life of 7-12 years and are now 10 years old with frequent failures.	\$600,000.00
<b>TOTAL</b>			<b>\$3,100,000.00</b>

FY 2020	Replace or clean and line 10,000 feet (approx. 2 miles) of water main (\$200/ft)	Poor water quality and limited fire protection due to heavily tuberculated water mains.	\$2,000,000.00
	Installation of new water meters and electronic registers on all residential service lines (+/- 10,000) - Phase 3 of 3, total cost of project is expected to be \$3,600,000.00 (Water's expectation is that Wastewater will share in cost 50/50).	Water meters are 20-30 years old and, due to age, are now underregistering and failing. The electronic registers have a battery life of 7-12 years and are now 10 years old with frequent failures.	\$600,000.00
	TOTAL		\$2,600,000.00



## John Deline

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**From:** John Deline  
**Sent:** Monday, February 29, 2016 4:28 PM  
**To:** 'Amy Green'; 'Angelo Bisol'; 'David Clark'; 'Dean Tran'; 'Jeffrey A. Bean'; 'Jody Joseph'; 'Joel Kaddy'; 'Marcus DiNatale'; 'Michael Kushmerek'; 'Paul Beauchemin'; 'Steve Hay'  
**Cc:** 'Stephen DiNatale'; 'AJ Tourigny'; 'vpusateri@pusaterilaw.com'; Lenny Laakso (LLaakso@fitchburgma.gov); Jeff Murawski (JMurawski@fitchburgma.gov); 'Michael J. Schrader'; Carol Brown; George Siener; Jennifer A. Lambert; McLaughlin, Michael (Southborough, MA); Mike McLaughlin; Rick Healey; Ron Lubianez  
**Subject:** Lien History for Water Division  
**Attachments:** Lien Spreadsheet - Feb-2016.pdf

Good afternoon Councilors,

Some questions have come up about unpaid water (and sewer) bills and the amounts lienied each year. I have analyzed the lien history for water (not wastewater) over the last 10 years and have put together a simple table (please see attached) of the amount lienied for each fiscal year and how much of the lienied amount and added fees have been paid. Also include are the history of tax title interest and interest/fees on water bills that have been paid late each year. Before analyzing this data, I would like to discuss why some water (and sewer) bills are not paid on time as it may not simply be because of a lack of funds.

There are typically three reasons why a property owner does not pay their bill on time:

- 1) Inadequate funds or the property is in foreclosure and the owner has stopped paying all bills.
- 2) If a property owner fails to pay his/her water/sewer bill on time and the amount in arrears is lienied, if there is a mortgage on the property, the holder of the note will frequently pay the bill and then increase the mortgagee's monthly payment to cover the expected amount of the water/sewer bill for the year for that property. Once that increase occurs, it can be difficult for the mortgagee to pay their water and sewer bill along with the increased mortgage payment that was increased expecting they would not pay their water/sewer bill on time (and the banks are hesitant to reduce the payment on the guarantee of the mortgagee that they will pay their water/sewer bill on time – the banks do not want to see these bills go unpaid). The result is a cycle whereby the water/sewer bills are not paid each year until they have gone to lien. While working in this field I have heard the comment from customers many times that “the bank just pays my water/sewer bills with my taxes so I don't bother paying them”.
- 3) Water and sewer bills are not tax deductible and, as a result, some water/sewer customers will intentionally neglect to pay their water/sewer bills intending for these amounts to be moved to their real estate tax account (real estate taxes are tax deductible). At that point, they pay the lienied amount. They then include this amount in the real estate tax deduction that they declare on their tax returns. It is my understanding that this is an ill-advised and evasive attempt to increase a deduction and possibly could be subject to penalties if discovered by the IRS.

When looking at the amounts lienied for water bills, it is not a simple matter to look at the amounts precisely by each fiscal year as some of the liens are paid (along with interest and fees) over the course of several fiscal years. We have noted that some amounts lienied for FY2006 were paid over the course of 8 fiscal years – most of it was collected in the first year after being lienied but then smaller amounts trickled in over the next 7 fiscal years.

I believe in looking at those bills that are not paid within the fiscal year they are billed (and end up being liened) the major concerns are: 1) does the Water Division have to borrow money to cover its operating expenses because these bills are not paid on time and, 2) does it negatively impact customers who pay their bills on time (and avoid interest and late payment charges). If there are concerns about unpaid bills other than these, please let me know.

To answer #1, the Water Division has not had to borrow money to pay its bills as a result of customers not paying their bills on time so there is no negative impact in terms of additional loans for operating expenses.

To answer #2, which I feel is the more important question, one has to look at the data and determine whether the Water Division is collecting all of the money it is billing out. This is not something that can be analyzed easily because there are some properties for which water bills and sewer/real estate tax bills do not end up being paid and then, in extreme instances, the city takes them for non-payment. Whether those properties are auctioned off by the city for an amount that will cover everything that is owed all city department's is not something I can easily review. In any situation other than the city taking the property, the water liens on a property will stay with it and, eventually, be paid along with interest (normally 14% but increases to 16% for tax title properties) and fees/penalties. Because of the difficulty in looking at it "piece by piece" I have taken the approach to analyze what has happened over the past 10 years and gain an overall picture as far as liens and what was collected along with the amount of revenue that was generated in interest/fees/penalties.

From FY2006 to FY2015, a total amount of \$3,712,798.22 was liened (you can review the attached table for the amounts for each year). From FY2006 to FY2015 the Water Division collected \$4,133,493.44 in liens/interest/penalties. In addition, the total amount of revenue to the Water Division from tax title property from FY2006 to FY2015 was \$512,970.70. From these numbers one can see that \$3,712,798.22 was liened over the course of 10 years and, from these liened amounts, a total of \$4,646,464.14 was collected on the original bills together with the interest/fees/penalties, which is a net positive of \$933,665.92 for the Water Division for this 10 year period.

In addition to the interest/fee/penalty revenue on the amounts liened, interest (14%) is also charged over the course of each fiscal year on all accounts/bills that are not paid within 30 days. The total interest in this category during the FY2006 to FY 2015 time period was \$660,538.14, an average of \$66,053.81 per year.

After looking at these numbers, one can see that, even though a large number of property owners do not pay their bills on time, the revenue generated on these "late bill payers" are a significant revenue stream for the Water Division. Over the course of 10 years, \$1.59 million in additional revenue (i.e., interest/fees/penalties) was generated and, in fact, is "counted on" as revenue in the budget each year. If the Water Division did not have this additional revenue from interest/fees/penalties on those property owners who pay their bills late, we would actually have to look at a higher rate increase to make up for it.

So, the bottom line is that the revenue from people who pay their bills late actually help (somewhat) to keep down the water rates – crazy isn't it?

Please let me know if there are any questions. I know that this can be a difficult topic to understand.

Thank you,

**John M. Deline, Jr., Deputy Commissioner of Water Supply**  
**Fitchburg DPW – Division of Water Supply**  
**1200 Rindge Road**  
**Fitchburg, MA 01420**

FY2006 through FY 2015 - Water Liens, Tax Title, and Interest Charges by Fiscal Year  
City of Fitchburg D.P.W. - Water Division

Fiscal Year	Unpaid water bills: amount lien by fiscal year	Revenue: collected liens and lien interest/fees/penalties	Revenue: bills and interest/fees collected on tax title properties	Revenue: interest/fees collected during the course of each FY on water bills paid late
2006	(\$338,577.83)	\$278,055.68	\$53,267.98	\$53,180.77
2007	(\$407,445.93)	\$373,944.85	\$58,336.19	\$61,616.80
2008	(\$445,688.27)	\$475,505.91	\$44,169.95	\$64,745.56
2009	(\$345,458.41)	\$520,906.65	\$42,963.14	\$69,672.55
2010	(\$336,650.65)	\$404,977.78	\$58,756.36	\$95,305.89
2011	(\$313,614.00)	\$418,507.69	\$45,076.27	\$83,693.35
2012	(\$404,673.77)	\$353,222.92	\$45,495.77	\$80,369.44
2013	(\$396,931.83)	\$452,731.99	\$37,586.37	\$80,844.03
2014	(\$388,303.09)	\$427,684.63	\$35,404.41	\$39,843.63
2015	(\$335,454.44)	\$427,955.34	\$91,914.26	\$31,266.12
<b>TOTALS</b>	<b>(\$3,712,798.22)</b>	<b>\$4,133,493.44</b>	<b>\$512,970.70</b>	<b>\$660,538.14</b>

## John Deline

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**From:** John Deline  
**Sent:** Tuesday, March 01, 2016 3:40 PM  
**To:** Amy Green; Angelo Bisol; David Clark; Dean Tran; Jeffrey A. Bean; Jody Joseph; Joel Kaddy; Marcus DiNatale; Michael Kushmerek; Paul Beauchemin; Steve Hay  
**Cc:** Stephen DiNatale; AJ Tourigny; 'vpusateri@pusaterilaw.com'; Lenny Laakso (LLaakso@fitchburgma.gov); Jeff Murawski (JMurawski@fitchburgma.gov); 'Michael J. Schrader'; Carol Brown; George Siener; Jennifer A. Lambert; McLaughlin, Michael (Southborough, MA); Mike McLaughlin; Rick Healey; Ron Lubianez  
**Subject:** Fitchburg - Average Monthly Bill for a Single Person and Family of Four  
**Attachments:** Fitchburg - Ave Monthly Bill for Single Person.pdf; Fitchburg - Ave Monthly Bill for Family Four.pdf

Good afternoon Councilors,

There is a comparison of Fitchburg's water rates/bills to those in surrounding communities in Tighe & Bond's presentation, which I sent to you last week, but I thought that I would put together something with more detail to help you understand the impact of the proposed rate increases on our customers. I have attached two tables, one shows the average monthly bill for a family of four at Fitchburg's current and proposed rates and compares these bills to those in other communities. The second table shows the average monthly bill for a single person with the same comparison. Please note that for each table I have ranked the average monthly bills from low to high so that you can see where Fitchburg would fall under the proposed rate increases. I believe that Tighe & Bond's comparison was an average yearly bill whereas I broke it down into monthly bills. I have personally vetted and calculated these bills based on the latest rates/fees for those communities to which the comparison is made.

In calculating the water bills for Fitchburg and each of the other communities I utilized the rate of 75 gallons per day per person (gpd/person), which is higher than the figures Tighe & Bond used in their calculations for average annual bills. This is in the high range as the average person typically uses from 55 to 75 gpd (state/country-wide average range, not just Fitchburg) and, in many situations (such as the elderly), it is much less than 55 gpd/person. However, I wanted to be conservative in my calculations and not undervalue the daily usage to lower my figures, especially in respect to the proposed increases.

One interesting thing that I would like to point out is that for a single-person Fitchburg's average monthly bill, even with the proposed rates increases, will be below Leominster. However, when calculating the bills for a family of four Fitchburg goes above Leominster with the 8% increase in 2017. This is due to the fact that the minimum charge is slightly higher in Leominster when averaged out over 3 months (Leominster bills quarterly while Fitchburg is monthly). Nothing wrong with my math, just a difference in how the water rates/minimum charges are structured, which I thought should be pointed out.

Hopefully this is helpful in your analysis of the petition and, if there is any addition comparisons you would like to see, please do not hesitate to ask.

Thank you,

**John M. Deline, Jr., Deputy Commissioner of Water Supply**  
**Fitchburg DPW – Division of Water Supply**  
**1200 Rindge Road**

**Average Monthly Water Bill for Single Person - Current and Proposed Rates**  
**City of Fitchburg D.P.W. - Water Division**

<b>Community</b>	<b>Billing Cycle</b>	<b>Number of Customers</b>	<b>Last Rate Change</b>	<b>Average Monthly Bill for Single Person (assuming 75 gpd/person)</b>
Fitchburg	Monthly	11,000	2011	\$8.50
Fitchburg	Monthly	11,000	2016 (+17%)	\$9.95
Fitchburg	Monthly	11,000	2017 (+8%)	\$10.75
Fitchburg	Monthly	11,000	2018 (+5%)	\$11.29
Worcester	Quarterly	42,000	2015	\$12.30
Leominster	Quarterly	12,190	2012	\$13.63
Lancaster	Quarterly	1,820	2013	\$15.61
Gardner	Quarterly	5,600	2012	\$15.78
Winchendon	Bi-annually	2,000	2015	\$16.85
Ashburnham	Quarterly	1,125	2014	\$18.75
Clinton	Quarterly	4,100	2007	\$18.87
Westminster	Quarterly	1,267	2012	\$19.84
Lunenburg Water Dist.	Quarterly	2,342	2010	\$23.60

**gpd - gallons per day**

**NOTE: TABLE IS ORGANIZED FROM LOWEST AVERAGE MONTHLY BILL TO HIGHEST AVERAGE MONTHLY BILL.**

**Average Monthly Water Bill for Family of Four - Current and Proposed Rates**  
**City of Fitchburg D.P.W. - Water Division**

Community	Billing Cycle	Number of Customers	Last Rate Change	Average Monthly Bill for Family of Four (assuming 75 gpd/person)
Clinton	Quarterly	4,100	2007	\$33.33
Fitchburg	Monthly	11,000	2011	\$37.03
Fitchburg	Monthly	11,000	2016 (+17%)	\$43.25
Worcester	Quarterly	42,000	2015	\$44.70
Leominster	Quarterly	12,190	2012	\$44.95
Fitchburg	Monthly	11,000	2017 (+8%)	\$46.75
Fitchburg	Monthly	11,000	2018 (+5%)	\$49.09
Lancaster	Quarterly	1,820	2013	\$53.64
Gardner	Quarterly	5,600	2012	\$57.20
Lunenburg Water Dist.	Quarterly	2,342	2010	\$57.20
Westminster	Quarterly	1,267	2012	\$58.34
Winchendon	Bi-annually	2,000	2015	\$62.39
Ashburnham	Quarterly	1,125	2014	\$73.67

**gpd - gallons per day**

**NOTE: TABLE IS ORGANIZED FROM LOWEST AVERAGE MONTHLY BILL TO HIGHEST AVERAGE MONTHLY BILL.**

## John Deline

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**From:** John Deline  
**Sent:** Friday, March 04, 2016 10:48 AM  
**To:** Amy Green; Angelo Bisol; David Clark; Dean Tran; Jeffrey A. Bean; Jody Joseph; Joel Kaddy; Marcus DiNatale; Michael Kushmerek; Paul Beauchemin; Steve Hay  
**Cc:** Stephen DiNatale; AJ Tourigny; 'vpusateri@pusaterilaw.com'; Lenny Laakso (LLaakso@fitchburgma.gov); Jeff Murawski (JMurawski@fitchburgma.gov); 'Michael J. Schrader'; Carol Brown; George Siener; Jennifer A. Lambert; McLaughlin, Michael (Southborough, MA); Mike McLaughlin; Rick Healey; Ron Lubianez  
**Subject:** Staffing and Fitchburg compared to Leominster  
**Attachments:** Water Division Dams - Maintenance & Repair Costs - Feb-2016.pdf

Good morning Councilors,

I thought I would give you a break for a couple days to absorb the information that I have sent you over the last week and a half. I am doing my best not to overload you with too much material (my apologies if I have) but at the same time also want to make sure that the questions/concerns presented to me are thoroughly researched and answered. Based on some feedback/questions I have recently received, I want to provide a general comparison between Fitchburg's water system and Leominster's, so here it goes -

Both cities have close to 200 miles of water main. However, that does not necessarily mean that the water mains in each system are equivalent. Fitchburg's population grew at a much faster pace than Leominster in the late 1800s/early 1900s. Some historical population figures for each city are:

	<u>1860</u>	<u>1890</u>	<u>1920</u>
Fitchburg	7,805	22,037	41,029
Leominster	3,522	7,269	19,477

From these figures you can see that Fitchburg's population was double Leominster's in 1860, triple in 1890, and more than double in 1920. To support this large population growth, many miles of water mains, service lines, hydrants, etc. were installed at the turn of (that) century, particularly in the 1890s to 1920. Leominster's population growth occurred more gradually and later. Therefore, on average, Fitchburg's water system is comprised of older piping (i.e., unlined cast iron) which puts Fitchburg ahead (if you want to call it that) of Leominster in the deterioration of its water mains, as all piping installed in this era was unlined cast iron pipe. What does this mean? More tuberculation, maintenance, breaks, and, in general, more problems.

Hydrants: Fitchburg has 30% more hydrants than Leominster (1900 vs 1460) and Fitchburg's hydrants are generally older (Fitchburg has 100-200 hydrants that are 100 years old or older, which we are gradually replacing) for the reasons stated above. We estimate that, overall, there are approximately 500 hydrants (out of 1900) that should be upgraded (i.e., replaced) as they are 70 years or older. These older hydrants will work but when used (for fighting a fire, flushing, etc.) will likely require maintenance/repairs or even replacement afterwards. What does it cost to replace a hydrant (removal of the existing hydrant, installation of the new hydrant, and restoration of the roadway/sidewalk/lawn)? Once these 500 are replaced, there will be another 500 that will be due for replacement. With our personnel about \$2,500 (just the parts & materials, without the city's labor priced in) and \$5,000 to \$8,000 utilizing an outside contractor (a little lower if it is part of a water main replacement project). The good thing is that, with the newer hydrants, the parts are more available and can be rebuilt rather than replaced. Most parts for hydrants that are 70 or more years old are difficult to impossible to

come by (whenever possible we do salvage parts from hydrants that are removed/replaced for use in other hydrants).

Number of treatment plants – Fitchburg has 2 large plants, Leominster has 1 large plant and 2 smaller plants.

Number of reservoirs – Fitchburg has 10, Leominster has 7.

Number of dams – Fitchburg has 13, Leominster has 7.

Number of water storage tanks – Fitchburg has 7, Leominster has 4.

Number of pump/pressure reducing stations – Fitchburg has 9, Leominster has 4.

Number of pressure zones – Fitchburg has 4, Leominster has 3.

Number of current, full-time employees (public and private) – Fitchburg has 25, Leominster has 22

And here is one major difference between Fitchburg and Leominster – in Fitchburg the city/Water Division is responsible for the water lines serving individual homes/buildings from the water main in the street to the property line (the owner is responsible from the property line to their house/building) whereas in Leominster the property owner is responsible for their service line from their house/building to the water main in the street. On average, we experience 50 to 60 leaks per year on the service lines from the water main in the street to the property line (of course, there are a similar number of leaks that occur on the “owner’s side”). Repairing these leaks on the “city side” as we call it usually requires one day for a crew to complete the repair and then another one-half to one day to properly complete the restoration of the road/sidewalk/lawn (leaks repaired in the winter months cannot be restored properly until the asphalt/concrete plants reopen and/or lawn areas can be loamed/seeded). This is a tremendous difference as it significantly increases our manpower needs over the course of a year.

Another difference worth noting is that Fitchburg bills monthly for water/sewer whereas Leominster bills quarterly. The monthly reading of meters (more than 11,000) and processing/mailling of bills is a labor intensive endeavor and also adds additional cost in terms of supplies/paper/envelopes/postage to the Water Division’s (and Wastewater’s) annual budget.

I would also like to visit the difference in the number of dams. Fitchburg has almost twice (13 vs 7) the number of dams/spillways/gatehouses that Leominster has. Many of these were constructed in the late 1800s/early 1900s to support the water supply needs of the rapid population growth of Fitchburg. Maintenance of these dams, etc. require a significant amount of manpower and money. Mowing, brush cutting, etc. alone is daunting. The professional engineer (Mark Giangiacomo) that works for the city completing the state-required dam inspections and, in general, keeps an eye on the state of our dams estimates that the Water Division spends almost \$180,000 per year on maintenance of the dams – that does not include recommended minor and major repairs for which revenue has simply not been adequate to complete. I have attached a table which lists each of the Water Division’s dams (the city has others in addition to this list) and the associated maintenance costs along with what has been recommended for budgeting for minor and major projects (this work will have to be programmed into the Water Division’s budgets in the coming years).

I have been asked why can’t Fitchburg get along with the same or fewer number of people as Leominster does? Hopefully you can see from the points above that, overall, Fitchburg has a larger, older water system despite a similar population size. Fitchburg has approximately twice the number of dams/spillways, storage tanks, and pump/pressure reducing stations to maintain, 30% greater number of hydrants to flush/repair/paint, is

responsible for water service lines to the property line, does monthly (not quarterly) billing, and in general has older water mains/valves/hydrants.

Hopefully this provides a better picture of how we compare to Leominster and the work that is required of our staff needs to maintain our water infrastructure. Fitchburg's water system is, on average, older and we have more "things" to take care of and, yet, Fitchburg's water rates have been 10% lower than Leominster's for a number of years. Unfortunately, time is not on our side and as Fitchburg's water system ages, investment in it becomes a necessity.

Thank you,

**John M. Deline, Jr., Deputy Commissioner of Water Supply**  
**Fitchburg DPW – Division of Water Supply**  
**1200 Rindge Road**  
**Fitchburg, MA 01420**  
**978-345-9616 ext. 109**



Summary of Dam Maintenance and Repair Costs

Water Division Dams - Estimated Maintenance and Repair Costs  
City of Fitchburg D.P.W. - Water Division

<u>Name of Dam</u>	<u>Annual Maintenance Costs</u>	<u>Costs - Minor Repairs</u>	<u>Costs - Major Repair</u>
Ashby Compensating Reservoir Dam	\$7,400.00	\$74,000.00	\$479,000.00
Bickford Pond Dam & Dike	\$18,000.00	\$83,000.00	\$0.00
Falulah Reservoir Dam	\$8,900.00	\$69,000.00	\$178,000.00
Fitchburg Reservoir North Dam, South Dam & Dike	\$27,500.00	\$748,000.00	\$1,150,000.00
Lovell Reservoir Dam	\$23,000.00	\$53,500.00	\$161,000.00
Mare Meadow Reservoir Dam	\$19,500.00	\$65,000.00	\$0.00
Meetinghouse Pond Dam	\$23,000.00	\$57,500.00	\$575,000.00
Overlook Reservoir Dam and Dike	\$9,500.00	\$116,000.00	\$748,000.00
Scott Reservoir Dam	\$16,500.00	\$85,750.00	\$635,000.00
Wachusett Lake Dam	\$12,000.00	\$0.00	\$0.00
Wyman Pond Dam	\$12,500.00	\$193,000.00	\$920,000.00
<b>TOTALS</b>	<b>\$177,800.00</b>	<b>\$1,544,750.00</b>	<b>\$4,846,000.00</b>

## John Deline

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**From:** John Deline  
**Sent:** Monday, March 07, 2016 3:00 PM  
**To:** 'Angelo Bisol'  
**Cc:** Amy Green; Angelo Bisol; David Clark; Dean Tran; Jeffrey A. Bean; Jody Joseph; Joel Kaddy; Marcus DiNatale; Michael Kushmerek; Paul Beauchemin; Steve Hay; Stephen DiNatale; AJ Tourigny; 'vpusateri@pusaterilaw.com'; Lenny Laakso (LLaakso@fitchburgma.gov); 'Michael J. Schrader'; Carol Brown; George Siener; Jeff Murawski (JMurawski@fitchburgma.gov); Jennifer A. Lambert; McLaughlin, Michael (Southborough, MA); Mike McLaughlin; Rick Healey; Ron Lubianez  
**Subject:** RE: Staffing and Fitchburg compared to Leominster  
**Attachments:** Water - Capital Improvement Plan - February 2016.pdf

Good afternoon Angelo,

We are looking at spending \$920,000 in FY17, \$3.3 million in FY18, \$3.1 million in FY19, and \$2.6 million in FY20 (the proposed capital improvement plan is attached). If the water rate increase does pass, our plan is to begin upgrades of water mains by replacing/upgrading about 2 miles of water main next summer (2018). We would actually have liked to begin this “first round” of water main upgrades this summer but we need to plan/survey/design/bid the project (which takes quite a bit of time). We also need to begin generating revenue and/or line up financing to pay for the work. The water main upgrade project for 2018 will be put out to bid over next winter, which is the most favorable time of the year for obtaining the best prices as contractors are looking to line up work for the construction season (usually by late winter to early spring they have their work lined up for the season - they may still bid on a project but will bid high to make it worthwhile for them to fit it into their schedule).

I would like to point out that this is not, unfortunately, a “project” that will eventually end. The city needs to continually invest in its water system and make sure that capital improvements are budgeted each fiscal year. Fitchburg has approximately 140 miles (out of approximately 190 total) that is unlined cast iron pipe and all of it will eventually need to be upgraded or replaced. In today’s dollars, that is \$140 million worth of pipe replacement (and that does not include the costs associated with maintenance and upgrade of treatment plants, storage tanks, pump stations, pressure reducing stations, dams, and gatehouses). Even spending \$2 million per year (not adjusting for inflation as time passes) it would take 70 years just to replace these “old” water mains and, when these are done, there will be additional miles of water main at the end of or even past their expected service life.

Water mains do have a “usable” service life – it is expected that newly installed water mains will last 100 years or more (actually pretty amazing that they have that long a life, wouldn’t it be great if newly paved roads or buildings lasted that long with only a regular cleaning, i.e., flushing?). Fitchburg has quite a bit of unlined cast iron that is 100-120 years old (way past its effective service life of about 50 years, new ductile iron water main has double the life span). Some of these old, unlined cast iron water mains are in such poor condition (i.e., heavily tuberculated) that the Water Division has had to resort to “bleeders” to provide “usable” drinking water. Sounds like something from an episode of Walking Dead or some other show or movie about zombies, doesn’t it? No, a bleeder is a method by which water is “bled” from the system through a small diameter water line (usually ¾-inch diameter) at a low but steady rate in order to “turn over” the water in the respective water mains so that it is maintained “fresh” and not stagnant. The water from these bleeders is discharged onto the ground, into a catch basin, etc. – simply wasted. This is not a practice unique to Fitchburg and there are very few water systems that do not have to utilize them – we all face the same challenges to providing good quality

drinking water. In fact, MA DEP requires water utilities in Massachusetts to record the amount of water utilized (or wasted) by this means and submit these figures in the Annual Statistical Report (ASR) that we are required to complete at the end of each calendar year. Currently, there are seven bleeders running in Fitchburg's water system, some have been utilized for years while a couple have been installed in recent years as the water quality has declined in the certain areas. In general, the rate of flow from these bleeders is 2 to 4 gallons per minute (gpm) which calculates to (using 3 gpm for an average) 30,240 gallons per day or about 11 million gallons per year. Now this is a small percentage (less than 1 %) of what the city uses over the course of the year, - an average of 3.76 million gallons per day or 1.37 billion gallons for a whole year (these are the figures for calendar year 2014) but, still, it is water going to waste that has been pumped, treated, etc. which is not something we want to do or take lightly.

The first two miles of water main that we propose to upgrade/replace under the capital improvement plan will address the majority of these bleeders, significantly reducing the water that is being wasted (which is a strong word because these "bleeders" are allowing us to provide safe, clean drinking water via a water main that is heavily tuberculated). However, replacing/upgrading the two miles of our worst water mains will not be enough because there are other areas that are nearing the lower water quality levels that would eventually require a bleeder if these mains also are not upgraded or replaced eventually. Therefore, we truly need to embark on a long-term, continuous program of water main upgraded/replacement in order to ensure that we can provide safe drinking water to future generations.

Hopefully I have answered your questions. If not, please do not hesitate to contact me.

**John M. Deline, Jr., Deputy Commissioner of Water Supply**  
**Fitchburg DPW – Division of Water Supply**  
**1200 Rindge Road**  
**Fitchburg, MA 01420**  
**978-345-9616 ext. 109**



**From:** Angelo Bisol [mailto:fitchburgward5@gmail.com]  
**Sent:** Monday, March 07, 2016 6:59 AM  
**To:** John Deline <JDeline@fitchburgma.gov>  
**Subject:** Re: Staffing and Fitchburg compared to Leominster

Hi John

I went through everything again.  
Do we have the actual project sequence and the cost associated with each phase?  
Also a time line when this will all happen.  
Thanks  
Angelo Bisol

On Fri, Mar 4, 2016 at 10:48 AM, John Deline <JDeline@fitchburgma.gov> wrote:

## SUMMARY OF FINDINGS

### NOTICE OF NONCOMPLIANCE NON-CE-14-5D028

#### *Table A – Violations*

Please note that this document is also a Notice of Noncompliance (NON) pursuant to M.G.L. c.21A, §16 and 310 C.M.R. 5.00. Within 30 days of receipt of the NON and Summary of Sanitary Survey, you must fill-in the corrected date(s) and submit this form to MassDEP and the attached WATER SUPPLIER RESPONSE AND CERTIFICATION FORM, including all applicable attachments.

	Citation	TABLE A - CORRECTIVE ACTION	GWR Significant Deficiency†	Action Due Date*	Date Complete by PWS
1.	22.04(7), 22.04(12) & Chp 2.17 & 7.1 Guidelines	As noted during the previous two sanitary surveys (2006 and 2010), the area around the Meetinghouse Reservoir gatehouse is not restricted to authorized vehicles and therefore is vulnerable to contamination, either accidental or intentional. The immediate area around the gatehouse and dam must be secured. Notify MassDEP upon completion.	N	01-OCT-2014	
2.	22.04(7), 22.04(12) & Chp 3 & 7 Guidelines	As noted during the previous two sanitary surveys (2006 and 2010), Meetinghouse Reservoir gatehouse needs rehabilitation. Notify MassDEP upon completion.	N	01-JUL-2015	
3.	22.04(7), 22.04(12) & Chp 2.6 & 7.7 Guidelines	As noted during the previous sanitary survey (2010 Table B), install a transfer switch at the Meetinghouse Reservoir gatehouse for a portable generator to provide backup power. Notify MassDEP upon completion.	N	01-JUL-2015	
4.	22.04(7), 22.04(12) & Chp 6.1.3.6 & 6.1.4 Guidelines	As noted during the previous sanitary survey (2010 Table B), develop a written alarm and interlock testing protocol and make it available at each WTP. The SOP shall include a list of the alarms/interlocks to be tested, the frequency of testing, and the method of testing. Testing of the chlorine gas leak detection system and emergency shower/eyewash units should be included. Notify MassDEP upon completion.	N	01-MAY-2014	
5.	22.04(7), 22.04(12) & Chp 8.1.4 Guidelines	As noted during the previous sanitary survey (2010 Table B), improve security at the Falulah Tanks. Notify MassDEP upon completion.	N	01-JUL-2015	
6.	22.04(7), 22.04(12) & Chp 8.1.4 Guidelines	As noted during the previous sanitary survey (2010 Table B), make repairs to the security fencing around the Oak Hill Tank. Notify MassDEP upon completion.	N	01-JUL-2014	
7.	22.22(3)(j)	Annually report to MassDEP through submittal of the Annual Statistical Report (ASR) those employees or subcontractors that conduct cross connection testing and surveying.	N	31-MAR-2014	

	Citation	TABLE A - CORRECTIVE ACTION	GWR Significant Deficiency*	Action Due Date*	Date Complete by PWS
8.	22.22(3)(c)	Submit to MassDEP a plan and schedule to complete a cross connection survey of all commercial, industrial, and institutional premises served.	N	01-MAY-2014	
9.	22.22(3)(d)1	Maintain a list of facilities surveyed in a readily accessible form. Maintain records of all cross connection surveys until another comprehensive cross connection survey is conducted; even the facilities without any cross connection must have a record that a survey has been conducted on file. Provide confirmation to MassDEP that survey files have been organized with the appropriate information.	N	01-JUL-2014	
10.	22.22(3)(j)	Report annually in the ASR the number and types of facilities surveyed.	N	31-MAR-2014	
11.	22.22(3)(c)	Submit documentation to MassDEP confirming that all FWD facilities have been surveyed for cross connections (e.g., water treatment plants and pumping stations).	N	15-APR-2014	
12.	22.22(3)(l)	Submit documentation to MassDEP confirming that any violations identified in the cross connection surveys have been addressed (eliminated or protected).	N	15-APR-2014	
13.	22.22(3)(l) & (r)	Submit documentation to MassDEP confirming that all backflow prevention devices owned by FWD function properly upon testing.	N	15-APR-2014	
14.	22.22(2)(a), 22.04(7) & Chp 2.2 Guidelines	Submit documentation to MassDEP confirming that the three piped plant bypasses that have been identified to date (Narrows Road Station, Regional WTP and Falulah WTP) have been eliminated.	N	31-DEC-2014	

### Table B – Deficiencies\*\*

MassDEP has made note of several items that do not reflect good water system practice; and, if left unresolved, could lead to problems that are more serious and may be elevated to violations in subsequent surveys. Due to the item's importance an action due date has been established.

	Citation	TABLE B - CORRECTIVE ACTION	GWR Significant Deficiency*	Action Due Date*	Date Complete by PWS
1.	22.11B	Submit an updated staffing plan for MassDEP review and approval.	N	15-APR-2014	
2.	22.04(7) & Chp 7.2.1 Guidelines	Replace the roof and submit documentation confirming that the roof of the Mare Meadow Pump Station has been replaced. The temporary repairs made in 2007 in response to the 2006 sanitary survey are no longer adequate.	N	31-DEC-2014	

	Citation	TABLE B - CORRECTIVE ACTION	GWR Significant Deficiency	Action Due Date	Date Complete by PWS
3.	22.04(7) & Chp 7.2.1 Guidelines	Replace the roof and submit documentation confirming that the roof of the Bickford Pond Pump Station has been replaced. The temporary repairs made in 2007 in response to the 2006 sanitary survey are no longer adequate.	N	31-DEC-2014	
4.	22.04(7) & Chp 7.4.1 Guidelines	Submit documentation that the finished water unidirectional flow meters at Scott Pump Station have been calibrated.	N	31-DEC-2014	
5.	22.04(7) & Chp 5.4.2 Guidelines	Relocate the continuous analyzers at the Scott Pump Station so that all water leaving the Falulah Tanks is being monitored and notify MassDEP upon completion.	N	01-JUL-2014	
6.	22.22(3)(c)	Determine if the backflow prevention device located on the feed line to the boiler in the Scott Pump Station is adequate. Take appropriate action(s) and notify MassDEP upon completion.	N	15-APR-2014	
7.	22.04(7) & Chp 2.6 & 7.7 Guidelines	A transfer switch for use with a portable generator must be installed at Rollstone Booster Pump Station. Notify MassDEP upon completion.	N	01-NOV-2014	
8.	22.04(7) & Chp 2.17 & 7.1 Guidelines	Install an intrusion alarm at Meetinghouse Reservoir gatehouse and notify MassDEP upon completion.	N	01-JUL-2015	
9.	22.04(7) & Chp 6.3.4. Guidelines	Repair the water heater at Regional WTP that supplies tempered water to the emergency shower/eyewash units and notify MassDEP upon completion.	N	01-MAY-2014	
10.	22.04(7) & Chp 8.1.7 Guidelines	Clear the vegetation from around the outfall from the Falulah Tank overflows so that the overflow outlet is visible and notify MassDEP upon completion.	N	01-JUL-2014	
11.	22.04(7) & Chp 8.1.4 Guidelines	Remove the trees along the security fence at Overlook Tank and notify MassDEP upon completion.	N	01-JUL-2014	
12.	22.04(7) & Chp 8.1.7 Guidelines	Provide a permanent means to secure the screen on the overflow of the Oak Hill Tank because corrective actions taken by FWD have not prevented this deficiency from reoccurring (2006, 2010). Notify MassDEP of the corrective action(s) taken.	N	01-JUL-2014	
13.	22.04(7) & Chp 8.1.22 Guidelines	Remove shrubs growing along Oak Hill Tank sidewalls and notify MassDEP upon completion.	N	01-JUL-2014	
14.	22.04(7) & Chp 8.1.3 Guidelines	Complete actions identified in the Underwater Solutions 2013 inspection report to prevent further deterioration of the roof of the Oak Hill Tank and notify MassDEP upon completion.	N	01-JUL-2015	
15.	22.04(7) & Chp 7 & 9 Guidelines	Repair or replace the 6-inch Ross valve (PRV) that is leaking at Marshall Regulating Station and notify MassDEP upon completion.	N	01-JUL-2014	

	Citation	TABLE B - CORRECTIVE ACTION	GWR Significant Deficiency†	Action Due Date*	Date Complete by PWS
16.	22.04(13) & Chp 12 Guidelines	The "Emergency Plan for Regional WTP Shutdown" (i.e., plant bypass for an extended period of time) in FWD's ERP does not acknowledge that implementation of a Boil Water Order would be necessary. Update this section of the ERP (refer to Level III Major Emergency in Appendix O-Handbook for Water Supply Emergencies on the MassDEP website). Provide a copy of this updated section of the ERP to MassDEP. Note: this section will also have to be revised in the future once the piped bypass that currently exists at this WTP has been eliminated.	N	01-JUL-2014	
17.	22.22(3)(f)	The public water system is responsible for establishing and maintaining a cross connection control program for residential users that shall include an educational component. Submit documentation to MassDEP as evidence of completion. MassDEP recommends that cross connection information be included in its annual Consumer Confidence Report (see attachment) as a means to fulfill this requirement. Also utilize the FWD website to provide educational information on cross connections.	N	15-JUL-2014	
18.	22.15(5)	Review the water withdrawal records for 2010, 2011 and 2012 and provide to MassDEP an explanation to the reporting issues raised in the Water Quantity section of this report.	N	31-MAR-2014	
19.	22.22(2)(a), 22.04(7) & Chp 2.2 Guidelines	Review distribution system records to identify any additional piped connections between untreated reservoir water and the treated water distribution system and make modifications to comply with the cross connection regulations. Notify MassDEP of cross connections identified and actions taken to eliminate the cross connection.	N	31-DEC-2014	
20.	22.04(7) & Chp 6.1.3.6 & 6.1.4 Guidelines	Include flow interlock testing that is reportedly being done quarterly on the log sheet at each WTP. Notify MassDEP upon completion.	N	15-APR-2014	
21.	22.04(7) & Chp 6.3.4 #2 Guidelines	Provide an eye-washing device in the PAC, sodium carbonate, sodium bicarbonate feed system areas of the Falulah WTP. Notify MassDEP upon completion.	N	15-APR-2014	
22.	22.04(7) & Chp 2.12 Guidelines	Label the PAC chemical feed lines in the Falulah WTP. Notify MassDEP upon completion.	N	15-APR-2014	

	Citation	TABLE B - CORRECTIVE ACTION	GWR Significant Deficiency†	Action Due Date†	Date Complete by PWS
23.	22.04(7) & Chp 6.1.3 Guidelines	Critical chemical feed systems must comply with 6.1.3 of the Guidelines. The soda ash metering pumps shall be configured to prevent overriding of the safety shutdown systems, which includes an HOA switch with a timer or spring loaded HOA switch. Notify MassDEP upon completion.	N	01-JUL-2014	
24.	22.04(7) & Chp 6.1.4 Guidelines	Non-critical chemical feed systems (e.g., sodium bicarbonate) must have audible and visual alarms when operating in manual mode. At a minimum, manual override mode operation shall initially activate a visual alarm and after a set period of time an audible alarm would be triggered. Notify MassDEP upon completion.	N	01-JUL-2014	

\*\* MassDEP reserves the right to exercise its Order authority under M.G.L. Chapter 111, Section 160, or to take other appropriate action as permitted by law, in order to prevent the pollution and to secure the sanitary protection of the water supply and to ensure the delivery of a fit and pure water supply to all consumers, including without limitation if sufficient progress to meeting a recommended deadline is not achieved.

### Table C - Recommendations

MassDEP has included a list of recommendations you are encouraged to evaluate and follow in order to improve your system's ability to provide safe and pure drinking water. Failure to act on these recommendations may be elevated to deficiencies in subsequent surveys.

	Citation	TABLE C - RECOMMENDATIONS
1.	22.04(7) & Chp 11 Guidelines	MassDEP recommends that the Fitchburg Division of Water Supply (FWD) update its Master Plan.
2.	22.04(13)(c), 22.04(7) & Chp 12 Guidelines	MassDEP recommends that Fitchburg conduct a Tabletop Exercise with staff on procedures to supply water and public notification in the event a treatment plant was not functional or a source became contaminated (source water supply failure, Section 8F of ERP).
3.	22.04(7) & Chp 3 Guidelines	MassDEP recommends that all dam intakes be visually inspected and the screens and gate valves maintained. The 24-inch shaft in the gatehouse at Fitchburg Reservoir is reported to be in need of repair.
4.	22.04(7) & Chp 3 Guidelines	MassDEP recommends that FWD consider developing a local Surface Water Supply Protection Plan. Review the guidance document and contact Kathy Romero of the Drinking Water Program in Boston (617-292-5727) for technical assistance.
5.	22.04(7) & Chp 11 Guidelines	MassDEP recommends that meter calibration be added into the computerized Preventative Maintenance Calendar.
6.	22.04(7) & Chp 2.3 Guidelines	MassDEP recommends that the light switches at Regional WTP be relocated outside of the fluoride chemical feed room.
7.	22.04(7) & Chp 6 Guidelines	MassDEP recommends that the shower/eye wash units at both water treatment plants be periodically tested and a log be kept. MassDEP recommends this activity be added to the Preventative Maintenance Calendar.
8.	22.04(7) & Chp 2.3 Guidelines	MassDEP recommends that the light switches for the clarifier/filter bay area at Falulah WTP be relocated from the middle of the bay to the access doors.

	Citation	TABLE C - RECOMMENDATIONS
9.	22.04(7) & Chp 5.10.7 Guidelines	MassDEP recommends that FWD consider bringing the sewer line to the Regional WTP site to handle wastewater generated at the plant as originally planned in the plant design.
10.	22.04(7) & Chp 2.3 Guidelines	MassDEP recommends that a light be installed in the valve vault at the Scott Tank.
11.	22.04(7) & Chp 8.1.7 Guidelines	MassDEP recommends that the overflow pipe for the Oak Hill Tank be extended to the final outfall and the interim overflow box be eliminated.
12.	22.04(7) & Chp 8.1 Guidelines	MassDEP recommends that the overflow pipe for the lagoon supernatant be extended to protect the integrity of the finished water tanks at Regional WTP.
13.	22.04(7) & Chp 7 Guidelines	MassDEP recommends that a flood alarm be installed in the vault adjacent to Westminster's pump station at Hager Park/Regional WTP.
14.	22.04(7) & Chp 2.17 & 7.1 Guidelines	MassDEP recommends that the police department be notified of the vandalism at Marshall Regulating Station and patrol assistance for this critical infrastructure be requested.
15.	22.04(7) & Chp 9.3.9 Guidelines	MassDEP recommends annual system-wide (unidirectional) flushing and a gate valve exercising program. (2006, 2010)
16.	22.04(7) & Chp 9.5 Guidelines	MassDEP recommends a hydrant maintenance program.
17.	22.22(3)(o)	MassDEP recommends that a written procedure for intra- and interdepartmental communication be developed for instances when water service is started/stopped, new facilities, plumbing changes, to make sure cross connection survey is considered.
18.	22.15(5)	MassDEP recommends that FWD continue to report water withdrawn from Fitchburg Reservoir and Scott Reservoir if FWD is confident that the methodology used provides accurate withdrawal volumes.
19.	22.04(7) & Chp 6.3.4 #1 Guidelines	MassDEP recommends that proper respiratory protection be used when working with dry chemicals that can produce dust.
20.		MassDEP recommends that FWD coordinate with the Fire Departments in Fitchburg and Westminster to test the chlorine gas leak detection systems at the Falulah and Regional WTPs. MassDEP recommends that gas leak detection systems and alarms be tested quarterly for proper functioning and a log be kept.
21.		MassDEP recommends that FWD permanently label any hydrants supplied by raw or not fully treated water as "non-potable" and notify the appropriate Fire Department and DPW.

\* If the time required to complete the action is greater than 3 months, submit quarterly progress reports and anticipated completion date.

† GWR Significant Deficiencies: The EPA, as part of the Groundwater Rule, required states to identify specific Significant Deficiencies that are related to the potential for fecal contamination of the water system. Significant deficiencies, when identified at a PWS that is subject to the Groundwater Rule, are regulated under the treatment technique requirements of the GWR. A PWS has 120 days to correct any significant deficiencies after notification from the state of their existence. If the deficiencies cannot be corrected within 90 days, then the PWS must enter into a MassDEP-approved correction action plan, with intermediate timelines for compliance. Failure to have an approved corrective action plan in place within 120 days or to comply with the timelines contained within the corrective action plan, constitutes a treatment technique violation, as detailed in 310 CMR 22.26(4). If a system fails to correct any identified significant deficiencies, then the PWS will be required to provide an alternate source of water, eliminate the source of contamination, or provide treatment that reliably achieves at least 4-log inactivation of viruses.

Tuesday, March 08, 2016

I am writing this in regards to our property at 15 Haskell St. in Fitchburg, which we purchased in March of 2011. When we purchased the property it had been foreclosed and was fully winterized. Upon moving in and turning our water back on, we noticed discoloration in the water which resulted in damage to clothing, as well as water that we did not feel comfortable drinking, cooking with or bathing in. For the past several years we have been forced to buy our drinking and cooking water, while continuing to pay our water bill.

Our first resolve was to investigate the pipes in our home to see if they were the cause. After speaking with several neighbors, we learned that they as well, were experiencing the same problems.

We, in addition to our neighbors made calls to the water department reporting the problem. I took pictures of the water and submitted those as well. Calls were made to Mayor Wong as well as emails to Councilor Kaddy. Within weeks, the water department was at the top of Haskell Street flushing pipes and allowing water to run down our road which resulted in clear water. After a few days of the flushing the water department returned, shut the water off, and the discoloration returned.

As you can see from the attached photo, this tap water was not fit for animals, never mind humans to consume. The city water pipes are ancient and far beyond their life expectancy. We would like to thank the Water Department for addressing our problem in an efficient manner so that our everyday life can be fairly normal. Until the pipes are replaced, the current situation seems to be working, but at the cost of thousands of gallons of water draining into the sewer pipe.

Everyone in the city is entitled to clean drinking water.

Sincerely,

Thomas & Ellen Hughes  
15 Haskell St.  
Fitchburg, MA 01420